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Examining Community College Faculty Attitudes Toward Open Educational Resources: A Mixed Methods Study

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ABSTRACT

EXAMINING COMMUNITY COLLEGE FACULTY ATTITUDES TOWARD OPEN EDUCATIONAL RESOURCES: A MIXED METHODS STUDY

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The purpose of this sequential explanatory mixed methods study situated at a large community college in the midwestern United States was to examine faculty attitudes, knowledge, and use of open educational resources (OER) and to identify institutional initiatives that would support OER adoption. The goal of the first, quantitative phase of this study was to replicate a national survey of higher education faculty on the subject of OER. Local faculty responses to the survey were compared to those of their national peers. The second, qualitative phase of the study was the development and analysis of a single case study that focused on two areas of interest. The first was to explain the survey results in greater depth. The second area of interest was capturing suggestions from faculty on how the institution might support OER initiatives.

Priority was given to the qualitative data analyzed in the second phase of the study. The mixing of both phases of this study occurred through the identification of interview participants and the development of the case study parameters based on the descriptive factors that emerged from the survey results. Mixing also occurred during the final analysis of the study as a whole.

The first phase of this study revealed that the local respondents (n = 346) were similar to their national peers in their attitudes, knowledge, and use of OER. One notable difference between the local and national group was in their ranking of criteria they used to select course resources. The local faculty prioritized the cost of course resources at a much higher rate than their national peers. Chi-square analysis was used to more deeply explore some aspects of the local respondents' awareness of OER. These statistical results confirmed an association between OER awareness and the respondents' knowledge of common features and licensing of open resources.

In the second, qualitative phase, data was gathered via two open-ended survey questions and through interviews of selected participants. Faculty members who were experienced users of OER were interviewed (n = 2). Using the qualitative survey data and interviews, a single descriptive case study was developed. The case analysis served to explain the survey results in more depth. Overall, the case study revealed that the respondents, though motivated to make college more affordable for students, are not yet at a state of readiness to adopt OER. The interviewees offered crucial information about their personal process of adopting OER and made suggestions for institutional support for OER initiatives at the research site.

Integration of the quantitative and qualitative phases of this research occurred during the interpretation of the outcomes of the entire study. Based on the findings of both phases of the study, a model for institutional support for open educational resources was developed.

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DEDICATION

For my beloved mother, Diana R. Cote.

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CHAPTER 1

INTRODUCTION

The American Association of Community Colleges (2015) reported that over four million students attend U.S. community colleges and about half of these students attend full-time. Because of their comparative affordability and diversity of curriculum, community colleges are particularly attractive to low-income students, first-generation college students, and minorities. Bailey, Jenkins, and Leinback (2005) found that more than half of community college students are from the lowest two income quartiles. A longitudinal study of high school graduates conducted by Pravasnik and Plenty (2008) found that people of lower socioeconomic status were more likely to postpone college and those who did enroll chose community colleges more often than their more financially stable peers. The National Center of Public Policy in Higher Education (2011) reported that 44% of lower-income students chose community colleges as their first college and that 70% of these students chose community college for affordability reasons.

According to the College Board (2015), the average full-time community college student in the U.S. spends approximately $3400.00 per year on tuition. These costs have increased incrementally over the last five years and do not seem to be slowing. In Illinois, the cost of community college tuition with fees has increased from $2302.00 in 2007 to $3241.00 in 2013, a 36.9% increase (College Board, 2015). The cost has increased by 3.3% between the

years 2014 and 2015, with each student spending an average of $103.00 more than the previous year for their college tuition, not including books and supplies (College Board, 2015).

The College Board recommends that full-time undergraduate students budget $1200.00 for books and supplies each year. This amount represents approximately 40% of a community college student's costs, including tuition. Though textbooks are not the most significant cost, they are the largest out-of-pocket expense aside from tuition that students encounter each year (Senack, 2015). To manage college costs, some students do not purchase course materials resulting in less learning and/or enrollment in fewer classes, slowing progress to degree completion (Buczynski, 2012). This trend is especially troubling for community colleges, because they serve the least financially able of undergraduate students. Alleviation of financial burden on students through the adoption of freely available educational resources such as textbooks and other course materials is a direct intervention that teaching faculty and institutions can implement to assist students and to increase retention and success.

Statement of the Problem

To date, few empirical studies have examined faculty perspectives on open educational resources in higher education. And the lack of research on the efficacy of OER, especially OER's potential for positive impacts on student success, contributes to the challenge of persuading instructors to consider open resources. In the empirical studies that examined student outcomes, OER materials were shown to be as effective as traditional resources, if not slightly better (Hilton, 2016). In studies that gauged perceptions of OER materials, the faculty perceived OER as the same or better than traditional resources either due to positive or neutral impact on student outcomes or the instructors' philosophical beliefs about the benefits of open

resources on student success (Allen & Seaman, 2014; Chae & Jenkins, 2015; Hilton & Laman, 2012).

Higher education faculty who are aware of OER judge the quality of open materials positively (Allen & Seaman, 2014; Andrade et al., 2011; Spiviloy & Seaman, 2015). However, Allen & Seaman (2014) reported that many instructors do not feel they are in a position to judge quality of OER because of their lack of awareness. Although faculty can appreciate the concept of openly shared educational materials and the potential benefits to students they do not consider themselves to be knowledgeable about OER (Allen & Seaman, 2014; Andrade et al., 2011; Harley, Lawrence, Acord, & Dixon, 2010; Spiviloy & Seaman, 2015). In fact, many faculty utilize some open resources in their courses but are, by and large, unaware of the fact that they are actually using OER (Allen & Seaman, 2014; Feldstein et al., 2012).

Lack of faculty awareness of OER could stem partially from the difficulty of finding OER materials. Allen and Seaman (2014) found that barriers to faculty adoption of OER center on the discovery and evaluation of OER materials and, in particular, the time and effort needed to find, evaluate, and incorporate the materials into their curriculum. Allen and Seaman's (2014) findings, and that of other researchers, revealed that perceived barriers such as availability of OER in subject areas, difficulty in finding OER materials, additional workload when implementing OER, lack of institutional supports, and other significant obstacles hold faculty back from seriously considering OER as alternatives to traditional materials (Harley et al., 2010 ((Bliss et al., 2012: Bliss, Hilton, Wiley, & Thanos, 2012; Chae & Jenkins, 2015; Hilton et al., 2013; Murphy, 2013; Rolfe, 2012).

An important issue to be considered is that educators require training, time, and other institutional supports to investigate open educational practices. Throughout the literature on

OER, the importance of institutional support is a common theme. Supports such as training opportunities, dedicated time to learn about and work on OER, and in many cases, financial support, are crucial to the adoption of OER (Carey, Davis, Ferreras, & Porter, 2015; Chae & Jenkins, 2015; Feldstein et al., 2012; Harley et al., 2010; Murphy, 2013; Rolfe, 2013).

Using a mixed methods design, this dissertation adds to the research on faculty knowledge of and attitudes about open educational resources and the supports that may be necessary to adopt OER. The rationale for using both quantitative and qualitative approaches in this research was that the quantitative data analysis provided a broad overview of the research problem while the qualitative data analysis refined and explained the statistical results by exploring the participants' views in more depth (Creswell & Plano Clark, 2011).

Purpose of the Study

The purpose of this sequential explanatory mixed methods study was to explore faculty knowledge and attitudes about and their use of open educational resources at a large suburban community college and to identify the institutional supports these faculty believe are necessary to effectively implement OER into the curriculum.

Sequential explanatory mixed methods designs involve collecting both quantitative and qualitative data and using one set of data to explain or elaborate upon the other (Creswell & Plano Clark, 2012). In this study, the quantitative data in the form of a survey was collected first to gauge the respondents' knowledge, attitudes, and use of OER. The qualitative data retrieved from the open-ended survey questions was analyzed to explain the survey results. Qualitative interview data was also collected to elaborate on the quantitative results and to gain insight into the institutional supports that interviewees reported were needed to explore and

implement OER opportunities. Priority in this study was given to the qualitative data collected in the second phase of the study.

In the first phase of this research, the quantitative phase, an exact replication of Allen and Seaman's 2014 national survey was collected from a sample of full and part-time faculty at a large community college in the Midwestern United States. The survey measured the respondents' knowledge, attitudes, and use of OER through comparison to the national data from Allen and Seaman's (2014) *Opening the Curriculum: Open Educational Resources in U.S. Higher Education* survey. In addition the quantitative questions, the survey also included two open-ended questions. Responses to these questions and the survey results informed the qualitative strand of this study.

The second phase of the study, the qualitative phase, consisted of the development of a single case study. Analysis of the case included qualitative examination of the open-ended survey questions, selection of and in depth follow-up interviews of purposely selected participants, and analysis of the interviews. These analyses focused on clarifying and expanding upon the results of the quantitative survey phase of the study. Again, the second strand of the study was prioritized. The plan for the follow up interviews was to explain the participants' experiences and attitudes as well as the institutional supports they believed would be valuable to educators adopting OER.

Survey Replication

Allen and Seaman, Directors of the Babson Research Group, began conducting attitudinal surveys about online education and educational technology in 2002. In their surveys of academic administrators about their attitudes about online education, Allen and Seaman

began including questions about open educational resources in 2009 and included OER questions in their subsequent surveys of the same population in 2010 and 2011.

In their surveys of higher education faculty (2012, 2013) Allen & Seaman queried respondents about trends in education that they observed in their previous surveys of academic administrators, including OER. Survey topics included identifying the key players in adoption of OER, the beliefs of administrators that OER would save time in curriculum development, and beliefs around the cost benefits to institutions who adopt OER resources. Allen and Seaman stated that their 2014 survey was designed to "determine if the previous results observed among higher education teaching faculty have changed over time, and explore the factors driving these trends in more depth" (p. 4).

Allen & Seaman's (2014) national survey queried 2,144 higher education faculty members on the topic of OER, and the survey was organized around five topic areas: selection of course resources, awareness, use, and assessment of OER, and barriers to OER adoption. Seaman & Spiviloy replicated this survey in 2015, examining faculty who work in public institutions in the state of North Dakota. Spiviloy and Seaman stated that the goals of their study were two-fold: "to understand how faculty in North Dakota compare to the national results on their knowledge, attitudes and use of open educational resources, and to serve as a baseline for future measurements of the potential impact of the North Dakota Open Educational Resources Initiative" (Spiviloy & Seaman, 2015, p. 7). The researchers found that faculty in North Dakota responded similarly to their national peers.

Through the replication of Allen and Seaman's (2014) survey with community college faculty at one institution, analyzing data gathered from the open-ended survey questions, and by conducting follow-up interviews with purposefully selected individuals, this research

expanded upon Allen and Seaman's (2014) survey findings. This research added to the knowledge about this particular faculty group and to community college faculty perceptions of OER in general. This research is of use to faculty, higher education administrators, and to those education professionals that provide support for curriculum development and teaching in higher education.

Description of Research Site

The research site is a community college located in the Midwestern United States and is the second-largest institution of higher education in the state. According to the criteria set forth by the Carnegie Classification of Institutions of Higher Education (2015) the research site is a very large, exclusively undergraduate, public, single-campus community college in a suburban area. In Fall 2015, the tenth day enrollment count of this institution was 28,678 students, with 16,310 full time equivalent (FTE) students attending. The Higher Learning Commission accredits the institution. The faculty members employed by this institution are the subjects of this research study. At the time of this study, the research site employs 297 full time faculty members and 1300 part time (adjunct) faculty members (Office of Planning and Institutional Effectiveness, 2014-2015).

Research Questions

Quantitative

The quantitative research questions addressed in this study were:

How do the faculty at the research site compare to Allen and Seaman's (2014) national sample on their knowledge, attitudes, and use of open educational resources?

Does an association exist between the respondents' stated awareness of OER and their stated awareness of common features and components of open educational resources?

Qualitative

The qualitative research questions addressed in this study were:

How do the respondents' explain their knowledge of, attitudes about, and use of OER?

What type of institutional supports do experienced faculty recommend to support other educators considering OER?

Mixed Methods

The mixed methods research question addressed in this study was:

How can the statistical results from the quantitative strand of the study be explained using the results from the qualitative strand?

Definitions and Terms

Open Educational Resources (OER): This study employed the Hewlett Foundation's (2013) definition of open educational resources. This definition was also utilized in Allen & Seaman's (2014) survey research:

> Open education resources are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.

Licensing of OER: Copyright law. In the United States, copyright automatically protects any work that an author creates in a fixed form and the work is endowed with an all-rights-reserved format. Materials published by traditional means can be used in their original form in educational settings under fair use or fair dealing provisions, but users would have to seek out and affirm these permissions, and reaffirm them with each substantial use of the material (U.S. Copyright Office, 2001). In the realm of open educational resources, copyright law is often incompatible with the philosophy of sharing and the re-purposing of works without explicit permission from the copyright holder (Lamlert, 2014).

Licensing of OER: Creative Commons. The Creative Commons is a method of licensing that was developed specifically to give authors options to share their work while protecting their intellectual property. Authors who utilize the Creative Commons to gives the public permission to share and use their creative work have the following basic options for licensing (Creative Commons, 2017):

- Attribution: Users can copy, distribute, display, perform, and remix the work as long as attribution to the author is provided. All Creative Commons licenses contain this provision.
- Attribution-Noncommercial: This license includes Attribution but the work can be used for noncommercial purposes only. Commercial users must contact the licensee for permissions.
- Attribution-Share Alike: This license allows for remixing and derivatives of the work, as long as the newly created work is shared under the same Creative Commons license as the original.

- Attribution-No Derivatives: Users can copy, distribute, perform, and display only verbatim copies of the work. If users wish to remix or creative derivatives of the work, the author must give explicit permission.

Licensing of OER: Public domain. Materials enter the public domain when copyright law no longer protects them or if the works fail to meet the basic criteria of copyright law. These materials can be freely used without permission. The reasons that works may not be protected by copyright include: the term of copyright for the work has expired, the author failed to satisfy statutory formalities to protect copyright, or if the work was created by the U.S. Government (Hirtle, 2017).

Theoretical Perspective

The diffusion of innovations theory (Rogers, 2003) was employed as the theoretical foundation of this mixed methods research study. The diffusion of innovations theory was well suited to the study because it examines the adoption of a new idea or practice by a distinct social group. Since OER was an emerging topic in higher education and was a nascent area of interest in the research setting, this study focused on the state of the social system prior to the adoption process and on faculty members who revealed in their survey responses that they were currently using open resources.

Diffusion Theory Background

Everett Rogers provided the most comprehensive theory of diffusion in his book *Diffusion of Innovations*, first published in 1962, now in its fifth edition (2003). (The fifth

edition will be cited throughout this study.) Diffusion is defined by Rogers (2003) as "the process in which an innovation is communicated through certain channels over time among members of a social system. It is a special type of communication in that the messages are concerned with new ideas" (p. 5). Modern diffusion theory is a product of many theories from a number of disciplines, focusing different elements of the diffusion process (Rogers, 2003; Surry & Farquar, 1997).

Rogers attributes the origin of modern diffusion research in the United States to a rural sociology study conducted in 1943 that used an interview-based methodology to examine factors related to the diffusion of a new technology in agriculture. The methodology used in this original study, according to Rogers (2003), has since remained the dominant methodology in diffusion research, and is the foundation of Rogers's own comprehensive theory. In *Diffusion of Innovations* (2003), Rogers presents a theory of diffusion that combines four distinct models. These models are: Innovation-Decision Process, Individual Innovativeness, Rate of Adoption, and Perceived Attributes. These models are interrelated and can often be applied independently in research. This study will utilize Rogers's profiles of innovation adopters, the Individual Innovativeness model, and aspects of the innovation-decision process as a lens to develop profiles of OER adopters in the qualitative phase of this study.

Individual Innovativeness

Rogers (2003) categorized individuals into the adopter categories based on the timeframe in which they began participation in the adoption process. In DIT, individuals are categorized into five distinct groups (Figure 1). Innovators are the first to identify new methods or tools and are usually outside of or are a minority in their social group. Rogers (2003) stated

that Innovators are typically on the outside of their social group because they tend to seek out and promote change with frequency. However, innovators are important to the diffusion process because they are the first to introduce new ideas into a social network or work group, though their activities are typically in isolation or in very small groups (Shea, Pickett, & Li, 2005; Porter & Graham, 2016; Rogers, 2003).

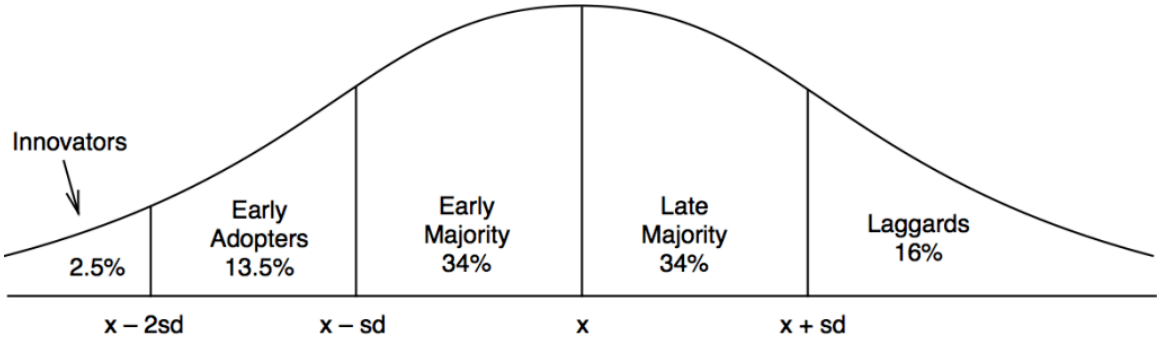


Figure 1: Diffusion of Innovations Adopter Categories (Rogers, 2003, p. 281)

Early adopters, taking cues from the Innovators, are the next segment of adopters. Early adopters are innovative people that tend to be well integrated into their social group and are highly respected by others as opinion leaders. In order to maintain the respect of others, early adopters tend to be more judicious and thoughtful than innovators in their choices about new innovations and how they communicate with their larger group.

Early majority adopters tend to adopt an innovation just before the average member of their group, deliberately following others in the act of change but they rarely lead. The late majority adopts an innovation out of economic necessity or because of peer pressure. Finally,

the laggards are the last of their social group to adopt and are considered quite traditional in that they not particularly innovative (Rogers, 2003).

Rogers (2003) uses innovativeness, operationalized as time of adoption, to develop the adopter categories. However, several researchers have argued that Rogers' notion of innovativeness (as applied to individual adopters) limits its methodological application because Rogers defines this theoretical construct in operational terms (Agarwal & Prasad, 1998; Moore & Benbasat, 1991). In Rogers's model, innovativeness is measured *ex post* as a descriptor of behavior, preventing it being used as a predictor of future behavior. However, learning more about the experience and attitudes of innovators, as thought-leaders that will influence early adopters in the peer group examined in this study, is key to the development of OER initiatives at the research site.

Innovation-Decision Process

The innovation-decision model has been so widely cited in the instructional technology literature that Sachs (1993) observed,

> after looking at [the literature] in our field, one might get the impression that the only important thing we need to know about how to encourage the adoption of innovations or how to be better change agents is that there are five stages to the innovation adoption process. (p. 7)

Rogers (2003) states that the diffusion process occurs over time and has five distinct sequential communication stages or channels. Rogers defines this process thus:

> The innovation-decision process is the process through which an individual (or other decision-making unit) passes from first *knowledge* of an innovation, to forming an attitude toward the innovation (*persuasion*), to a *decision* to adopt or reject, to *implementation* of the new idea, and to *confirmation* of this decision. (p.170)

Diffusion is not an "instantaneous act" but is a process that occurs over time. (Rogers, 2003, p. 169). The prior conditions that tend to exist before consideration of an innovation begins are based on an individual or social group's perceived needs or problems, on their previous practice, the level of innovativeness of the individual or group, and the norms of the social system (Rogers, 2003). These prior conditions will provide a basis for analyzing the current state of the respondents as a social group.

This researcher acknowledges the inherent pro-adoption biases in the diffusion of innovation theory. DIT will be used as lens through which to develop a probable illustration of prior conditions and the development of profiles of OER adopters from among its participants. Diffusion theory, particularly the adopter categories and the innovation-decision process model, has often been suitably applied to good effect in educational technology studies. Examining individual adopters and the social conditions at the research site prior to the innovation-decision process in order to speculate upon the eventual diffusion (or non-diffusion) of OER's at the research site grounds this study in a well-known theory and informs both the development and the analysis of the qualitative strand of the study.

Delimitations

Delimitations of the study include:

1.) This study replicated a national survey and its subjects will be limited to only one community college. The focus on one unique group of community college faculty did not allow for generalization among another groups of faculty at other community colleges or other institutions of higher education in the United States.

2.) The interviewees' responses were confined to their own individual experiences as faculty members at the research site.

3.) This study provided the perspective of only one group of interested parties at the research site. Other constituent groups that might be interested in the research topic, such as academic administrators, faculty librarians and counselors, and students, will not be included in this research study.

4.) Participation in this study was offered to faculty who were currently employed either full or part time at the institution during the time the survey was open. Due to the nature of the employment patterns of adjunct faculty at the College, e.g. the same adjunct faculty not teaching every term, the full population of adjunct faculty at the College were not represented.

Limitations

Limitations of the study included

1. The possibility that the survey responses from the faculty groups could have been disproportionate since the adjunct faculty population (n = 1400) is much larger than the full time faculty population (n = 295).
2. Cross-sectional convenience sampling was used in the quantitative strand of this study. The researcher cannot claim with confidence that the sample will be representative of the population at the research site (Creswell, 2009).
3. There was a potential risk for non-response bias—there could have been potential issues caused by the differences in responses between those who elected to respond to the survey and those who do not respond. For instance, individuals who were

familiar with the survey topic could have responded at a greater rate than those who were unfamiliar **(**Dillman, Smythe, & Christian, 2009).

4. Since the quantitative analysis was predominately descriptive in nature, this study was limited to generalizing to the population from which the sample was obtained (Creswell, 2009; Rea & Parker, 2005).
5. To create the environment for a two by two contingency table upon which to test hypotheses using the chi-square statistic, responses to certain questions were filtered and categorized. Though the categorization of these responses was clear and logical, a false dichotomy was created that could have resulted in a loss of information, statistical power and, if it had been measured, a loss of variance (Gravatter & Wallnau, 2011).
6. In the second strand of the study, the qualitative data obtained through interviews may be subject to differing interpretations by different readers of the results (Merriam & Tisdell, 2015).
7. Since qualitative research is interpretative in nature, the investigator may introduce personal biases about the research topic and respondents into the analysis of the findings (Creswell & Miller, 2010).
8. The theoretical lens used in this study is inherently biased toward completed adoption processes. The Diffusion of Innovations theory is heavily used in the examination of adopted innovations as opposed to initiatives that resulted in non-adoption (Wenjert, 2002).

9. It was possible that there were no adopters of OER at the research site at the time of this study. Should that have been the case, selection of interview subjects in the second phase of the study would not have been possible (Creswell, 2012).
10. The original survey report was published in 2014. Since use of and knowledge about OER could have expanded since, it is conceivable that the faculty members' participating in this study may be more aware of OER than the original survey participants.
11. There was potential for bias in the qualitative results because the researcher was a full-time faculty member at the research site; however, the researcher had a different role at the institution than the research subjects.

Significance of the Study

The rising cost of higher education is a contributing factor in the reduction of student success. At the research site, affordability issues have prompted the institution's Board of Trustees to consider a variety of avenues to reducing the financial burden for students. At the time of this writing, the College's Board of Trustees had recently lowered tuition, reduced lab fees, and eliminated fee-based parking in order to assist students financially and to reduce the tax burden for citizens in the district. Providing students with options for the reduction of course materials fees, such as textbooks, lab manuals, and other course resources would contribute to the institution's mission of providing affordable quality education for citizens in the College district.

The adoption of open educational resources in at least some disciplines would contribute to the institutional mission of affordability and quality. However, it is unknown how

many of the faculty are actively using OER, how much they know about OER in general, and what types institutional support might be needed to assist faculty in the development and adoption of OER materials. This research will provide much-needed insight into the institution's readiness to begin an OER initiative and will provide a starting point to begin considering OER's as an institutional priority.

This study will also have valuable results due to its mixed methods design. The replication of Allen & Seaman's survey is valuable on its own. Extending Allen & Seaman's survey research to include more detailed statistical analyses and the qualitative examination of the open-ended survey questions will also add value to the literature on OER. The in-depth case study examination utilizing multiple sources of qualitative data will also be valuable as stand-alone research into the subjects' beliefs about OER, experience with OER, and what a successful large-scale OER implementation at the research site might look like to them. The mixing of both the quantitative survey results and the qualitative descriptive case study will provide a robust and detailed analysis and will address the research questions in more depth. Additionally, there are very few studies that address questions around faculty knowledge and attitudes about, and their use of open educational resources. Since there are no mixed methods studies on this topic, this research will also contribute to the gap in the mixed methods research literature.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

The following review details the positive and negative aspects of adopting open educational resources (OER) in higher education and includes an examination of applications of diffusion theory in educational technology settings. Given the few empirical reports on OER in higher education, this review will also include information from general reports on the use of OER in higher education from research institutes and other information from credible sources that aid in describing the current research environment in which this study is situated.

Open educational resources have been a topic of interest in education for at least fifteen years (UNESCO, 2002). Although applications of OER are expanding in higher education, the empirical research literature on the effectiveness of OER and student and faculty perceptions of OER is sparse. Allen and Seaman's (2014) survey is often referenced in the research literature and is discussed at length throughout this study.

OER Effectiveness

Open educational resources impact a variety of constituency groups including students, faculty, learning support staff, and education administrators. In a world-wide survey conducted by the OER Research Hub, 37% of educators reported that they perceived that the use of OER

contributed to student satisfaction and 27% of the educators surveyed agreed with statements that the use of OER improved students' test scores (de los Arcos et al., 2014).

Empirical studies on the effectiveness of OER are few but the topic is beginning to gain traction in education research. As Hilton (2015) noted, "it is important to gather empirical research demonstrating [OER's] efficacy and quality" (p. 1). As of this writing, there are eight peer-reviewed empirical studies that examined the effect of OER on student outcomes. These studies, discussed in detail below, found that in general student outcomes in courses using OER were either the same or slightly better than courses using traditional publisher-produced materials.

In the largest study of its kind to date, Fischer et al. (2015) examined whether the adoption of no-cost open digital texts predicted students' completion of courses, achievement in class, and their enrollment intensity during and after the semesters in which open textbooks were used. Fischer et al. (2015) used a quasi-experimental design to examine the differences in outcomes in groups of students in courses that utilized OER and those that did not. The sample of students included 4909 students in the treatment condition (using OER) and 11,818 students in the control condition (using traditional texts). The sample was drawn from four 4-year colleges and eight community colleges, in 15 courses across several different disciplines.

Fischer et al. (2015) found that there was no significant difference between groups in terms of the students' course completion though in two outlier courses, the students who were assigned OER texts were retained at a much higher rate. In terms of course achievement, the results were mixed. In nine of the courses, there were no significant differences in achievement in five of the courses; OER students were more likely to pass the course than those in the

control group. In one course only, the students' assigned a traditional text were shown to be more likely to pass the course.

Fischer et al. (2015) also found that the results of the analysis of students' course grades were also mixed. In ten of the courses, there was no significant difference in final course grades. In four of the treatment condition classes, the students' grades were higher. In their examination of enrollment patterns, the researchers found that students who were enrolled in courses that utilized OER enrolled in more courses in the current semester and in the following semester. Fischer et al. (2015) did not claim causality but did assume that the cost savings facilitated this increased enrollment.

The stated limitations of this study were notable. The relatively small number of courses, variety of disciplines, lack of controls over teaching, student demographics, and other factors prohibited multi-level modeling of the statistical results. Acknowledging typical confounds in educational research, the researchers state that the results of the study were conclusive in terms of documenting positive or unchanged student outcomes in relation to the use of OER but Fischer et al. were careful to not make causal claims. In this study, the use of OER, while not shown unequivocally to improve student outcomes, alternately did not hinder student success.

In a similarly designed project, Allen et al. (2015) conducted a quasi-experimental study in which the treatment class of 478 students used the OER ChemWiki as its primary textbook, while the control class of 448 utilized a commercial textbook. The two sections were taught the same semester at back-to-back times using the same faculty member and teaching assistants. Students in both classes were given the same midterm and final exams. The researchers found no significant differences between the two groups both in overall exam results and item-

specific questions. Beginning of the semester pre-tests combined with final exams showed no significant differences in individual learning gains between the two groups. Student surveys regarding time spent on the class found that students in both groups spent approximately the same amount of time preparing for class.

Utilizing Carnegie Mellon University's Open Learning Initiative (OLI) content, under the auspices of MIT's Council on Educational Technology, Bowen et al. (2014) reported on the use of a statistics textbook in the OLI program at six institutions of higher education. Participating students were randomly assigned a traditional textbook in a face-to-face course (n = 2439) or were assigned to a hybrid course with an open textbook (n = 605). Each group of students took a pre- and post-tests. The researchers found there was no discernable difference in student outcomes between experiment groups. This could be viewed as a positive effect in that the students' outcomes were not adversely impacted by the use of OER materials.

Robinson et al. (2014) conducted a quantitative study to analyze whether the adoption of open science textbooks in a secondary school significantly affected learning outcomes. The researchers implemented a quasi-experimental design to compare the learning outcomes of students using traditional publisher-produced textbooks vs. open access textbooks. The authors found that students who used open texts scored .65 higher than the traditional text group, when controlled for 10 student and teacher covariates. Though statistically significant gains were noted, the effect size of these gains was relatively small. However, the results did show that open texts could be as effective, if not slightly more effective, than traditional publisher-produced texts.

One study did claim a definite positive increase in student outcomes. Pawlyshyn, Braddlee, Casper, and Miller (2013) found that when OER materials were used in math courses

at a small liberal arts university, student learning significantly increased. Pass rates in courses using traditional resources in previous semesters was 63.6%. After OER was adopted in these courses, the students' pass rates increased to 68.9%. In addition, the researchers found that in one reading course, students who were assigned free OER materials performed better than those students who were assigned traditional materials.

Hilton & Laman (2012) reported on the positive effect of an open access free Psychology textbook at a large community college. In response to concerns that the cost of textbooks had a prohibitive effect on student success, the Psychology program faculty reviewed, edited, and adopted an open textbook on the Flat World Knowledge (FWK) platform and developed supplemental learning materials to match the text. Additionally, the faculty adapted their department's final examination test bank to accommodate the use of the new text. Hilton and Laman's (2012) study included 23 sections (n = 690) of an introductory course. The researchers developed three outcome measures to assess the effectiveness of the OER material implemented in the course. The first measure documented baseline student data obtained from the semester just previous to the study. This data included grade point averages, withdrawal rate, and departmental final examination scores. The second measure examined student outcomes in a subset of the courses in the study that were taught by two instructors that used the OER material and the traditional materials. The final outcomes measure was a survey of student perceptions of the OER materials.

Hilton and Laman (2012) found that in the first measure, the overall student performance and retention in the OER group was better than the students in the traditional text group. In the second measure, the two faculty members who used the OER materials in one semester and the traditional materials the following semester reported an increase in student

performance, retention, and final examination scores. In the final measure, the student survey, the researchers found that the majority of students who used the free OER materials were satisfied and did not find the online format of the text inhibiting. Eighty-four percent of students responded positively to statements referencing the reduction of financial burden having contributed to their success.

In a study that also used the OER materials on the FWK platform, Feldstein et al. (2012) conducted a yearlong pilot study on the use of open access textbooks in the business program at a large State university. This study was prompted by the results of a prior survey of students at this university which revealed that only 47% of students were purchasing textbooks for their courses--affordability being the most frequently cited reason for this trend. In response to this serious concern, the faculty selected Flat World Knowledge as their main vendor of open textbooks and supplementary course materials for the 9 courses under examination. The researchers deliberately chose open textbooks licensed under Creative Commons, citing accessibility and flexibility of content as key motivators for selection.

Feldstein et al. (2012), in this non-experimental pilot study, examined how the OER provided benefits to students, how the student perceived the materials, and how the use of open materials correlated with improved student outcomes. The pilot study included 991 students enrolled in 9 core business courses. The researchers found that more students accessed the digital open texts than had previously purchased the paper copies of the textbook, and higher grades were reported in courses that used open texts. The most revealing aspect of this study was the students' use and perceptions of the course materials. In a follow-up student survey, approximately two-thirds of the student respondents agreed that the OER materials were more useful than traditional texts and that they preferred the OER content. (The researchers concede

that the students' preference for OER could be due to the fact that OER materials were free of charge.)

At the end of the pilot, the researchers (Feldstein et al., 2012) reported that 85% of enrolled students accessed the course materials, which the researchers' assumed correlated with improved student outcomes. This assumption was not proven since student outcome data from previous courses that did not use open access materials was not provided. Therefore, the reported increase in student performance was anecdotal rather than empirical. The researcher note limitations in that "this paper belongs in the realm of action research; there was no attempt to create…experimental design or rigorously determine causality" (p. 8). However, the results of this pilot program were useful to the institution going forward.

Hilton et al. (2013) examined the utilization of OER in four math courses (n = 1400) at a large community college. These courses used the same departmental exam that had been used in this course for several years. The researchers compared student outcomes of these four courses to those of previous years and found that student outcomes were the same before and after the OER implementation. The researchers also found that 78% of the 910 students surveyed would recommend OER materials to others and 83% agreed that the materials adequately supported their studies outside of class.

Faculty Perceptions

Faculty attitudes and perceptions of OER are directly tied to their perceptions of increased student outcomes and to the institutional support faculty receive. In the current research literature, themes of faculty perceptions echo Allen & Seaman's (2014) finding that

faculty are concerned with quality and ease of use of OER and indicate that faculty perception of OER quality improved as student achievement in courses were perceived to increase.

In two of the studies that focused on the impact of OER on student learning discussed in the previous section, data on faculty perceptions of OER was included. The faculty that Hilton et al. (2013) surveyed (n = 18) responded that they found OER similar in quality as traditional texts they had used previously. Six of the respondents found OER to be better. Feldstein et al. (2012) noted that further research is needed to determine faculty attitudes about open access resources and fully digital materials. Feldstein et al. (2012) utilized a single-platform solution to delivering OER and this was perceived as a barrier to faculty. The authors concluded that it is important for each faculty member to determine the best possible materials to suit their curriculum, rather than using a one-stop-shop platform.

An oft-cited study conducted by the University of California-Berkeley's Center for Studies in Higher Education in cooperation with the Student PIRGs (Harley et al., 2010) examined, via survey and focus groups, the attitudes of higher education faculty about open access textbooks and affordability. The researchers surveyed 224 faculty members and conducted follow-up focus groups with 22 subjects. The response rate of this study was fairly small (generalizability was not claimed by the researchers) in both study tracks: 3801 instructors were invited to participate in the survey; 468 instructors were invited to the focus group meetings.

This research revealed that faculty want a diversity of choices when choosing a textbook and do not "take well to one size fits all solutions" (p. 1). The researchers characterized faculty as "independent thinkers, exceptionally busy, suffer[ing] from information overload" (p. 6), and are generally dedicated to student achievement. The

researchers also noted that faculty are very averse to any top-down model (administration to faculty) of textbook selection. The researchers found that purely electronic solutions for texts and other course materials are not an acceptable option for faculty and will not be embraced in the near term.

As in other studies of faculty attitudes, including Allen & Seaman (2014), Harley et al. (2010) found that faculty were unaware of the scope of the OER content available to them, were unaware of OER repositories and finding aids, and/or believed there were few quality OER materials available in their discipline.

The issue of training of and assistance to faculty on finding, evaluating, and using OER materials resonates throughout the available literature on faculty attitudes about OER. Respondents were aware of and are sympathetic to the cost burdens of textbooks on students but felt that the importance of the content of the textbook to their curriculum goals had to be taken into account (Harley et al., 2010; Allen & Seaman, 2014). In other words, critical course content might not be readily available in alternative (OER) sources and traditional publisher-produced texts might be the only option. Other concerns, such as currency of materials and the difficulty in finding quality OER sources was also noted. In the six years since the Harley et al. 2010 study, higher education faculty are still citing the difficulty in finding relevant OER materials as a major barrier (Allen & Seaman, 2014).

Though finding materials is challenging, researchers report that faculty are generally positive about the quality of the materials that are available. Hilton et al. (2013) reported that the mathematics instructors involved in their study were positive about the quality of OER materials. Fully half of the participants in the study stated the quality of the materials were

equal to that of traditional sources, 33% reported the quality was better, and 17% stated the quality was not as good as traditional publisher-developed materials.

Bliss et al. (2013a) investigated community college student and faculty perceptions of OER through a consortia program entitled Project Kaleidoscope (PK). The PK program brought together eight community colleges to develop course designs and textbooks using OER. In Fall 2011, the partnering institutions enrolled 2,000 at-risk and/or low-income students into the PK program with 40 instructors. The researchers described the PK program as unique in that its focus was on supporting OER adoption at the institutional-level. The PK faculty teams identified and evaluated existing OER materials from a variety of sources to incorporate into courses and into course text development. The program had two objectives: to eliminate textbook costs as an obstacle to success for students and to allow faculty greater flexibility in the selection and sharing of course resources.

Bliss et al. (2013a) surveyed 125 students and 11 faculty concerning the cost and quality of the open textbooks used in the PK program. Overall, students enjoyed the benefit of lower costs, accessibility of the course materials, and perceived the materials as high quality. Conversely, many students using the PK texts had difficulty accessing the course materials because they were delivered completely online and not all students, particularly those who are lower income, have consistent and reliable access to the Internet and computing technology. Though the results of the student survey were encouraging, the authors concede that technical difficulties and students' preferences for paper texts may have caused the students' reported perceptions that paper texts were better quality than the online texts used in the PK courses.

The faculty survey, though the sample was very small (n = 11), was revealing. Bliss et al. (2013a) reported that PK faculty believed that they spent more time preparing to teach using

OER than they had in previous semesters using traditional materials. The researchers note that this could be viewed as a hidden cost to OER implementation and speaks to the need for institutional commitment and support. In terms of the instructors' perception of quality, which, by some, was measured by how often their students used the materials, respondents reported that their students used the open texts as often as their other students used their traditional texts. Student preparation, by far a more important indicator than use, was reported as being equal to students using traditional texts. The researchers also noted that all respondents indicated their intent to use open texts again in the future.

Bliss et al. (2013b) extended their study by surveying a larger number of users; 58 instructors and 490 students examined on their perceptions of the OER they used in the PK program. The researchers found that approximately 50% of the students surveyed regarded the OER texts to be of the same quality as traditional texts, 40% said the texts were better. The students in this study seemed focused on the fact that the texts were free. About half faculty respondents reported that they perceived the quality of the open materials as the about the same as texts they had used previously. About 35% reported the texts were better because of the flexibility of OER texts and lower costs to students.

Institutional Supports

It is important to note that all OER initiatives described in the previous two sections of this review enjoyed some level of institutional support and larger scale initiatives such as those reported by Bliss (2013a, 2013b) would not have been possible without institutional commitment to OER. A report by the Open Educational Quality Initiative (OPAL; Andrade et al., 2011) identified the major barriers to individual faculty's implementation of OER materials

as: lack of institutional support, lack of skills and time, lack of technological tools for developing and sharing resources, and quality/suitability of materials. Another barrier that Andrade et al. (2011) reported was the participants' lack of trust in the OER sustainability in the long term. The causes of these perceived barriers could likely be mitigated by institutional supports in the form of giving faculty time to investigate, develop, and implement OER in their courses, providing necessary training, and dedicating educational support staff to assist faculty (Allen & Seaman, 2014; Andrade et al., 2012; Bliss et al., 2012.).

Murphy (2013) reported on a descriptive survey study that examined policies and practices for supporting implementation of OER at institutions of higher education that are members of the "OER University" (OERu) network. The OERu network provides both free MOOC-like courses and other open resources for utilization by faculty and students in several countries, predominately in Australia and Western Europe. Murphy also queried education professionals at institutions who were not members of the OERu to determine if there were differences between institutions that were not formally involved in an OER program. Murphy found that although 88% of the respondents (n = 110) considered themselves to highly knowledgeable about OER, institutional participation in and support of OER's was low in both OERu institutions and non-OERu institutions. Murphy attributes this lack of formal support to the newness of OER and the time it takes to institutionalize new practices in education. Surprisingly, regardless of the extent of their involvement in OER practices, no significant differences were found between network and non-network members in terms of the support they institutions to implement OER practices. Both groups perceived themselves to be inadequately supported by senior leadership.

Sequential Explanatory Mixed Methods Research in Education

Ivankova & Stick (2007) used a sequential explanatory design that prioritized the qualitative data to examine students' persistence in a doctoral program. Similarly, Knaggs, Sondergeld, and Schardt (2015) examined the impact of college preparatory programs on student persistence in undergraduate education, but used a quantitative prioritized design. Buck et al. (2009) utilized the sequential explanatory design that emphasized the qualitative data to investigate the attitudes of minority girls toward science education and to develop strategies for science teachers in low-income urban communities. In instructional technology research, studies utilizing the sequential explanatory design appear in the literature on topics such as augmented reality in secondary science education (Chen & Wang, 2015), attitudes toward social networking tools by underperforming minority high school students (Howard, Curwen, Howard, & Colon-Muniz, 2015), and the examination of college students' digital copy-and-paste note taking (Igo, Kiewra, and Bruning, 2008).

Adoption Categories in Diffusion Theory

Diffusion theory is applied in research across a wide variety of disciplines. For the purposes of this research, studies that centered on adopter characteristics conducted in educational settings and on educational technology topics were the focus of the following review. As discussed previously, this research was concerned with Rogers's (2003) adopter categories since OER is in its nascent stages of adoption at the research site. To reiterate the core premise of the theory and its models (Rogers, 2003): diffusion theory and its models are not predictive; they are used to longitudinally and retrospectively examine adoption once it has

already taken place, though many predictive adoption models are based on the fundamental principles of Rogers's diffusion theory (Agarwal & Prasad, 1998; Davis, 1989; Davis, Bagozzi, & Warshaw, 1989; Fishbein & Ajzen, 2010; Rogers, 2003).

Bennett and Bennett (2003) reviewed factors that influenced faculty adoption of a learning management system (BlackBoard) in a pilot faculty development program designed to increase BlackBoard adoption at the University of Missouri-Columbia. The researchers noted that innovators and early adopters were critical to the process of increasing adoption by the 20 faculty members who participated in the program. The researchers' found that including the experiences of innovators and early adopters of instructional technologies, and having these adopters participate in the training process, increased adoption by the participants in the program by 90%.

In their examination of the diffusion of online teaching among faculty (n = 913) working the State University of New York (SUNY) system, Shea, Pickett, and Li (2005) focused primarily on the communication channels in the diffusion process as laid out by Rogers (2003). As discussed in Chapter One of this study, these channels are: knowledge, persuasion, decision, implementation, confirmation, and in some instances, reinvention. The researchers discussed the critical impact of innovators and early adopters categories in their final recommendations about diffusion of online learning. Shea, Pickett, and Li (2005) found that involving experienced users in the professional development process of pre-adopters to be beneficial. Experienced faculty assisted new users by helping them better understand the innovation and increased their opportunities to adopt. Rogers (2003) noted that these factors are facilitative to any adoption process.

Hixon et al. (2012) also examined faculty who taught online courses over a period of

four years. They found that since innovators and early adopters were "comfortably teaching online," these individuals had significant influence over the newer adopters. The researchers noted that institutions should be looking to the next wave of adopters in online teaching, those that the researchers define as the "reluctant majority" and utilizing experienced faculty to increase adoption (p.102).

In their examination of institutional factors that facilitate or inhibit faculty adoption of blended learning, Porter and Graham (2016), surveyed faculty (n = 214) on their perceived status in the diffusion theory adopter categories and their beliefs about institutional supports that would increase faculty adoption of blended learning. The researchers' asked respondents to report on their adoption of online teaching technologies and also to rank themselves on the adopter category scale. The researchers ultimately decided to not rely on the adopter self-categorization because the variance between these self-reported scores and that of the respondents' actual adoption was found to be unreliable. Instead, the researchers identified the respondents' adoption categories according to Rogers's (2003) framework based on the respondents reported use of technology.

Porter and Graham found that institutions that are attempting to support innovation in teaching, such as blended learning, should focus first on those individuals who would be likely placed in the innovator and early adopter categories. The researchers noted that these adopters, those who are at the beginning stages, would be "significantly influenced by establishing adequate [institutional] infrastructure and support and by recognizing that the institution's purposes for adopting…are congruent with their own" (p.758). The researchers looked ahead to those adopters who would be categorized as early majority and suggested that the "chasm" between the early adopter and early majority adopters be addressed by providing these faculty

with compelling evidence of the value of adopting the innovation, perhaps in the form of data collected from earlier efforts in the adoption process (Moore, 2002).

The diffusion theory literature that focuses on the adopter categories is illustrative of the importance of focusing on the innovators and early adopters in the adoption process of innovations in education, particularly those innovations that are related to technology. This study utilized this advice by identifying OER innovators and documenting their experiences and factors that would have assisted them in their adoption process. Determining institutional supports that the innovators suggested would be most beneficial to themselves and to their colleagues who may be considering adoption was also supported by the literature.

CHAPTER 3

RESEARCH DESIGN

Mixed Method Design Characteristics

This study employed a mixed methods design (Teddlie & Tashakori, 2010). Mixed methods procedures include collecting and analyzing both quantitative and qualitative data and "mixing" or integrating the two forms of data in a single study in order to understand the research problem more in-depth (Creswell & Plano Clark, 2011). Mixing of quantitative and qualitative data is justified when single methods are not sufficient to address complex and nuanced questions, such as those surrounding faculty attitudes and knowledge of open educational resources (Creswell, 2012). Combining quantitative and qualitative methods in a single study produces data sets that complement one another and results in a more complete analysis of the research question/s. (Teddlie & Tashakkori, 2010).

There are three main considerations in the design of a mixed methods study: data prioritization, implementation, and data integration (Teddlie & Tashakkori, 2010). Priority refers to which type of data is emphasized in the study. Though both sets of data are rigorously analyzed, one type of data can be prioritized in a mixed methods study. According to Creswell and Plano Clark (2011) the researcher implements the data collection either concurrently or sequentially, building one set of data on the other in stages, or by embedding the two forms of data within the other. The two data sets are then integrated or "mixed.

In their discussion of the general characteristics of mixed methods research, Teddlie and Tashakkori, (2010) stated that a variety of paradigms can serve as the underlying philosophy for the use of mixed methods ("paradigm pluralism" p. 9). Mixed methods research combines distinct methodological approaches and those approaches can be viewed as philosophically at odds with one another. For instance, quantitative researchers typically take a deductive, objective approach while qualitative researchers take an inductive, subjective stance. For researchers attempting to combine methods, these conflicting philosophical differences can be insurmountable, and may leave important questions unanswered. To address this issue, Creswell & Plano Clark (2011), Biesta (2010), and others have suggested that researchers approach their work pragmatically, starting from the research interest.

In quantitative approaches, the researcher uses a strategy of inquiry that relies on numerical data and uses post-positivist assumptions to examine relationships between variables to develop knowledge. The quantitative researcher uses cause-and-effect thinking, parsimonious sets of variables, hypotheses, tightly-focused questions, along with the development of measures to test theories while qualitative researchers develop knowledge claims from a constructivist point of view (Creswell, 2009). The qualitative researcher's strategy of inquiry is a holistic process in which the researcher is the primary instrument of data collection (Merriam & Tisdell, 2015). Qualitative research is conducted in a natural context and data is collected from informants who are immersed in the ordinary daily life of the setting in which the study is conducted. Qualitative data is analyzed based on multiple contextual perspectives of the participants in the study and, ultimately, on the researcher's insight into how their participants view their world. (Creswell, 2013).

In mixed methods approaches, the researcher constructs knowledge from a pragmatist viewpoint asserting that truth is discovered using a variety of questions and research methodologies. Biesta (2010) states that the selection of a research design "is seen as one that should be driven by the very questions that research seeks to answer" (p. 96). Mixed methods researchers choose compatible methods, variables, units of analysis, theoretical lenses, and data analysis techniques that they believe are the most appropriate to develop answers to their research questions.

This practical approach to answering questions, according to Biesta (2010) and Johnson, Onwuegbuzie, & Turner (2007), is best supported by Dewey's philosophy of pragmatism. Pragmatism, unlike other philosophical approaches like positivism (quantitative) or constructivism (qualitative) is not a strict philosophical position but is a set of philosophical tools to use to answer questions. Since both inductive and deductive reasoning must be used in mixed methods research, Morgan (2007) suggests that the pragmatic approach of abduction be employed. Abductive reasoning moves fluidly between both induction and deduction. For the purposes of this study the pragmatic, abductive approach was not only practical, it was more authentic.

Sequential Explanatory Mixed Methods Research Design

The sequential explanatory mixed methods design has been applied with good effect to problems in educational research (Buck et al. 2009; Chen & Wang, 2015; Creswell, 2012; Howard, Curwen, Howard, & Colon-Muniz, 2015; Igo, Kiewra, and Bruning, 2008; Ivankova & Stick, 2007; Knaggs, Sondergeld, and Schardt, 2015). Sequential explanatory designs have two distinct phases. The design is characterized by the first collecting and analyzing of either

the quantitative or qualitative data followed by the collection and analysis of the other type of data in the second phase of the study, building upon results of the initial phase. In explanatory mixed methods designs, one phase of the sequential design is typically given prioritization in the data analysis.

In this study, the overarching goal was to examine the study participants' attitudes about and their knowledge and use of OER, and to begin to identify institutional supports necessary for faculty interested in adopting OER. The purpose of the first, quantitative phase was to measure the participants' attitudes, knowledge, and use of open educational resources and compare them to their national peers via a replication of Allen and Seaman's (2014) survey. The purpose of the second, qualitative phase of the study was to develop descriptive case study that focused on two areas of interest. The goal of the case study was to explain the survey results in greater depth and to develop a plan for how the institution might support OER initiatives.

The qualitative phase of the study consisted of analyzing the textual data from the open-ended survey comments, selecting interview participants who met specific criteria, analysis of the interview data, then the analysis of the case a whole to explain the statistical results (Yin, 2009). The rationale for this approach was that the survey analysis in the first phase resulted in a general foundation of the research problem: faculty knowledge, attitudes, and use of open educational resources, while the qualitative data analysis in the second phase resulted in an in-depth explanation of those results.

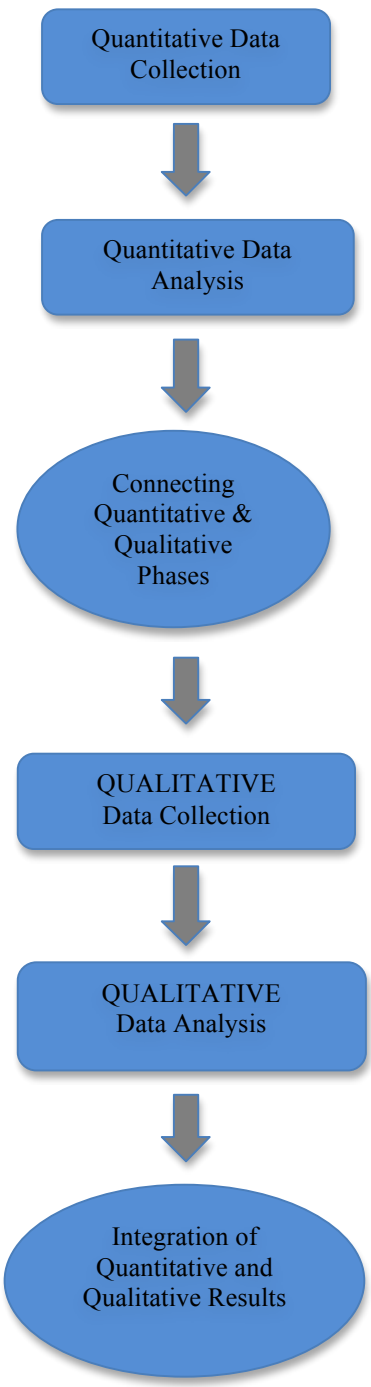
Priority was given to the qualitative phase in this study because of its focus on detailed explanation the survey results from the first phase; the mixed methods notation for this study was: quan → QUAL (Creswell & Plano Clark, 2011). Multiple sources of qualitative data were

used to develop a descriptive single case study (Yin, 2009). The qualitative data resulting from the open-ended survey questions was analyzed first to more fully explain the survey results, and to guide the development of the interview protocol. The data that resulted from the interview phase of the study further clarified the survey results and provided important insights and recommendations from experienced faculty on how the institution can best support OER experimentation and implementation.

The mixing of the data occurred between the distinct phases of the study during which one type of data was used to explain the other. Additionally, data from the first phase was used to build the second phase of the study (Creswell, 2012; Teddlie & Tashakkori, 2010). The visual model of the sequential explanatory design of this study is presented in Figure 2.

Challenges of Sequential Explanatory Designs

Although the sequential explanatory mixed methods designs are straightforward and used to good effect in social sciences research, this approach is not without challenges (Creswell, 2009.) The sequential design seems simple to implement because of its clear, separate stages. Description and reporting is also straightforward due to its sequential nature. Its main weaknesses, according to Ivankova, Creswell, and Stick (2006), are the length of time involved in collecting two distinct sets of data and the need for the researcher to be well versed in both quantitative and qualitative research design and analysis. Another challenge to this type of design is that the second phase of the study cannot be fully developed until the first phase has been completed.



Phase	Procedure	Product
Quantitative Data Collection	Replication Survey *n* = 354 Convenience Sampling	Numeric Data Text data (open-ended questions)
Quantitative Data Analysis	Data Screening Cronbach's Alpha Frequency Analyses Chi-squared test of independence SPSS GradPack 24 for Mac	Descriptive Statistics Instrument Reliability Relative frequencies Comparison with national data Correlational data
Connecting Quantitative & Qualitative Phases	Development of case study Purposeful selection of interviewees (*n* = 2) Development of interview questions	Case definition Descriptive conditions of the case Interview Protocol
QUALITATIVE Data Collection	In-depth individual interviews Survey comments	Text data (interview transcripts) Text data (survey comments)
QUALITATIVE Data Analysis	Verification procedures Coding and thematic analysis of qualitative survey data and interview data Within-case analysis NVIVO software	Case Description
Integration of Quantitative and Qualitative Results	Interpretation and explanation of the quantitative and qualitative results	Discussion Implications Model for institutional support Suggestions for future research

Figure 2: Visual Model for Sequential Explanatory Mixed Methods Study

Rationale for Single Case Study Format

The development of the case study was the connection between the quantitative and qualitative phases of this sequential explanatory mixed methods design (Creswell & Plano Clark, 2011). The single-case study, as described by Yin (2009) and Stake (1995), requires a dedicated rationale because the case design must be directly related to some theoretical interest and provide substantive context for the assumptions under examination in the study. The diffusion of innovations, as the theoretical lens for this study, is typically used to examine a single phenomenon or innovation throughout a bounded social network. Rogers's theory is grounded in case study research because of its focus on explaining the factors influencing adoption/non-adoption of a discrete innovation within a single group bounded by the context of the adoption process (Rogers, 2003).

Much like single-case experimental designs in quantitative research, results of single case examinations cannot be claimed to be generalizable to broader populations (Yin, 2009). According to Hancock and Algozzine (2006), researchers engage in intrinsic case study research to examine a particular question or event and are not "necessarily interested in examining or creating general theories or in generalizing their findings to broader populations" (p. 32). As stated in the delimitations, this study was focused on one unique group of faculty at a single community college and its results are not claimed to be generalizable to similarly situated groups of faculty.

Research Permissions

Participant permissions were secured at each phase of the study. The researcher secured written permission from the authors of the original survey that was replicated in the quantitative phase of the study. (Appendix A.)

In compliance with Northern Illinois University's Institutional Review Board (IRB) regulations, written permission to conduct this research was obtained (NIU-IRB, 2015). The *Application for Institutional Review of Research Involving Human Subjects* was filed that included information about the researcher, the names of dissertation committee chair and other members, the project title, review type requested, and expected number of subjects/participants. The IRB application included a thorough description of the proposed project and its procedures, methodologies, participant recruitment procedures, criteria for eligibility and exclusion of participants, and the consent process. Permissions were also obtained from the research site's IRB following the same process as the IRB of Northern Illinois University. (Appendix B.)

Ethical Considerations

Informed consent forms were used in each phase of this study. (Appendix C.) The consent forms elaborated on the participants' rights, explained the guarantees of anonymity, how the data obtained from them was handled, how respondents will be identified in the study report, and how the data would be shared/published after the study has concluded. Participants in the quantitative phase of the study were required to agree to the conditions of the informed consent before proceeding to the online survey and, as a second measure, participation in the survey reflected their compliance with the study conditions. Permission from participants for

the qualitative phase of the study were similarly obtained and managed. Interview participants signed an informed consent form prior to being interviewed that also included agreement to the audio recording and verbatim transcription of the interview.

Numerically coding the survey questionnaire and keeping the responses confidential guarded the participants' anonymity. Pseudonyms were used to identify the interviewees in the qualitative analysis phase of this research (Creswell, 2013). Participants were informed that summary data would be disseminated by various means to the professional community and that it will be impossible to trace specific responses back to an individual. Other ethical considerations include the construction of an interview protocol that respected the interviewees' time and was sensitive to their personal situation in the workplace (Merriam & Tisdell, 2015). All data resulting from this study, including raw survey data, interview files and transcripts, and the researcher's field notes will be stored in a secure cloud-based file storage service called Dropbox to which only the researcher has access.

The Researcher's Role

The researcher had different roles in each phase of the study. In the first phase of the study, the researcher had a passive role as the administrator of the survey; collecting data from the convenience-sampled respondents, performing the reliability and validity examinations of the instrument items, and analyzing the numerical survey data using established statistical procedures. In the second qualitative phase of the study, the researcher was an active participant (Creswell, 2012). The researcher developed criteria for the selection of interviewees, was the interviewer, and analyzed the qualitative data utilizing her knowledge of the research site, the subjects, and the research topic.

As mentioned in the study limitations, there was a possibility of researcher bias in this study. The researcher was a faculty librarian at the site and the research subjects were classroom instructors who teach credit-bearing courses and develop curriculum. Librarians at this institution have faculty standing equal to their teaching colleagues but do not have direct control over curriculum or selection of course resources. Faculty librarians, though they can influence the selection of course resources, are charged only with advising and supporting classroom instructors in their work. Creswell (2012) and Stake (1995) recommend caution in conducting qualitative research in environments in which one is an insider. The researcher's role as a faculty member at the research site was far enough removed from that of her subjects' to maintain objectivity.

CHAPTER 4

PHASE I: QUANTITATIVE ANALYSIS

Methods and Procedures

All references to Allen and Seaman in this chapter will refer to the 2014 Opening the Curriculum report unless otherwise indicated. The original survey and report included a series of demographic questions and 20 attitudinal questions organized around seven topic areas. Table 1 defines these topic areas and provides examples of questions addressing those topics in the survey. The survey also included two questions to collect qualitative data. The topic area "OER Use" included an open-ended question inviting respondents to list specific open educational resources of which they were aware. The survey concluded with an open comments section to gather information about faculty attitudes about OER.

Instrumentation

The survey instrument, as noted previously, was a replication of Allen and Seaman's 2014 instrument. (Appendix D.) Allen and Seaman provided the researcher with the original Qualtrics survey instrument that was used in its original form in this study. The survey file included all of Allen and Seaman's original survey questions along with the numerical coding scheme the authors devised for analysis of their results.

Table 1

Survey Topics and Items

Topics in Allen & Seaman's (2014) survey & report	Summary of topic	Items
Demographics	Obtains descriptive and demographic information	Are you employed full or part time? How long have you been teaching? What is your teaching discipline?
OER awareness	Explores awareness of OER.	How aware are you of OER?
	Explores awareness of OER licensing.	How aware are you of the following licensing mechanisms? [Public Domain, Copyright, Creative Commons]
Resource selection: gatekeepers	Explores the nature of decision-making process in the adoption of educational resources.	Who has a role in selecting educational resources in the courses that you teach? Who has the *primary* role in selecting the educational resources in the courses that you teach.
OER use	Explores how respondents are currently using OER materials.	Have you used any of the following types of open educational resources? (lists types)
	Explores the beliefs of respondents who are not currently using OER about their future use.	Please provide some examples of OER that you are aware of (open-ended text response) Do you think you will use open educational resources in the next three years?
OER assessment	Explores faculty opinions about the quality of OER as compared to traditionally published materials.	How would you compare the quality of open resources to that of traditional resources on the following dimensions? How would you rate the quality of OER and traditional publishers?

(Continued on following page)

Table 1 (continued)

Topics in Allen & Seaman's (2014) survey & report	Summary of topic	Items
Potential barriers to OER	Explores perceived barriers to the adoption of OER.	What are the three most important deterrents to the use of open educational resources in your courses?
	Explores challenges to the location and selection of OER.	How would you rate the ease of searching for educational resources for your courses?
Future use of OER	Asks respondents who are not current users of OER to predict their future use of OER.	Do you think you will use Open Educational Resources in the next three years?
Faculty attitudes	Explores faculty statements of their opinion on the survey content.	Please let us know your thoughts on any of the issues covered in this survey. (text response)

The survey questions were related to the respondents' attitudes and current knowledge about open educational resources. The survey contained 27 factual and attitudinal questions in a variety of formats: 7-point Likert-type scales, multiple choice, multiple selection, dichotomous (yes/no) questions, and ranked item questions. Demographic questions presented in the survey included queries about the respondent's employment status, length of tenure, age, gender, discipline in which they teach, and other pertinent demographic details.

Agreement with informed consent was the only required question in the survey. Participants were allowed to skip questions and/or response choices because the survey had no required responses or the nature of the question necessitated skipping possible answer choices

(Choose three, etc.). Participants who stated they had no practical experience with OER were excluded from questions that addressed specific OER use.

There was one alteration made to the original instrument for clarification purposes. In the item concerning academic disciplines (Q2), the broad disciplines used in Allen & Seaman's survey did not coincide with the organizational structure of the research site. The classification "Technical" was added to the Engineering category to attempt to capture faculty who teach in engineering-related technical education programs such as Automotive, Manufacturing, and Electronics.

The survey also included two open-ended questions. The respondents were asked to give examples of specific open educational resources of which they were aware, in addition to an open comments section. An invitation to participate in the incentive drawing was included in the survey in addition to an invitation to participate in the qualitative phase of the study.

Quantitative Data Collection

Sampling

For the first phase of the study, convenience sampling was utilized since the target population were currently employed either as full or part-time instructors at the research site. At the time of the study, the research site employed approximately 300 full time and 1200 part-time faculty members during a regular semester. As mentioned in the study limitations, the uneven proportion of both groups (full-time and part-time faculty) was a concern but ultimately did not prejudice the outcomes of the data analysis since the responses of the two groups within the sample were not compared. The proportion of full time vs. part time respondents was: 54%

of the full time faculty and 13% of the adjunct faculty responded. From a possible population of 1500, the sample size for the group of respondents (n = 346) calculated with a 95% confidence interval had a margin of error of 4.62, which is appropriate for a survey with variables expressed as proportions (Rea & Parker, 2005).

Participation was solicited through official campus email distribution lists for full and part time faculty. (See Appendix E for the initial recruitment letter.) The survey took place during the Spring 2016 semester and ran for approximately three weeks until saturation had been reached (Fowler, 2013). The researcher sent out weekly reminders during the duration of the survey data collection.

To motivate respondents to participate in the survey, incentives were offered. These incentives included a tablet device, an e-reader, and gift cards for the campus coffee shop. After the data collection was completed and numerical assignments were made for each respondent, a random number generator was used to select the five participants that received an incentive. The incentive was for survey participation only and was not connected with the qualitative phase of the study.

Survey Administration

The survey was distributed to all full and part time faculty employed at the research site between the dates of April 14 and May 19, 2016. During that time period, 429 participants started the survey. The label "Finished" was used to identify completed cases (n = 346), Table 2. This label indicated that the respondent clicked the "submit" button as the last action on the survey. All cases that did not contain the Finished label were discarded as incomplete.

Table 2

Finished Surveys (n = 346)

		Frequency	Percent	Valid percent	Cumulative percent
Valid	1	346	100.0	100.0	100.0

Reliability and Validity

Reliability

Gravatter and Wallnau (2011) stated that the reliability of measurement is related to the idea that each individual score includes an element of error, which could be related to small, undeterminable factors such subject's state of mind at the time of their response. If this error component is indeed small, then the scores should be consistent from one measure to another and it can be assumed that the measures are reliable. According to Field (2013), internal consistency reliability means that an individual should get the same score on an item if they respond at two different points in time or that two individuals who are similarly situated within the construct being measured would have the same score.

In survey research, a scale item should consistently reflect the construct it is measuring. In this study, establishing internal consistency reliability was determined through measuring Cronbach's coefficient alpha on the survey items that were scored as continuous variables (Table 3). The ideal Cronbach's alpha coefficient of a scale for exploratory social science research should be above .70 and above .80 as preferable for confirmatory research (Nunnally,

1978). Since there were no negatively worded or reversed items, the transformation of scales was not necessary to measure Cronbach's coefficient. The licensing awareness subscale consisted of three items (α=.792), the OER Components subscale consisted of 7 items (α=.779), and the Compare Quality subscale consisted of 12 items, (α=.921). Per the aforementioned threshold, all subscales have acceptable internal consistency and scale items were identified as inter-related.

Table 3

Scale Items

Construct	Number of items	Scale
Licensing awareness: public domain, copyright, creative commons?	3	4-point: unaware-aware-somewhat aware-very aware
OER components: free, remix/repurpose, creative commons, easy to modify, easy to combine, high quality, current.	7	3-point: would not include-may or may not include-would include
Compare quality: OER vs. traditional resources.	12	4-point: no opinion/don't know-traditional resources superior-about the same-OER superior

Validity

Validity refers to the development of evidence that the scores from the instrument produce meaningful and useful inferences (Creswell, 2012). Allen & Seaman's survey gathered facts that were objectively measureable, as well as subjective information such as

attitudes, opinions, and beliefs. Content validity shows the extent to which the scores from the survey items are sensible and measure what they purport to measure. The content validity of this instrument can be argued proven through the repeated use of the same items and scales in surveys on the same topic conducted by the Babson Research Group (Allen, Seaman, Lederman, & Jaschik, 2012) and other full replications with distinct populations of higher education faculty (Spiviloy & Seaman, 2015).

Construct validity refers to whether the survey items actually measure the concepts of interest and if the scores "serve a useful purpose and have positive consequences when used in practice" (Creswell, 2012, p. 149). Again, the survey items and results from Allen and Seaman's survey have been published and referred to repeatedly so it was safe to assume construct validity. To take construct validity a step further in this study, the survey results were "useful" to the development of the second phase of the proposed study and indeed had "positive consequences" in practice. Additionally, the national and local groups scored similarly on the majority of the items, which also confirmed the validity of the instrument to the extent to which a largely attitudinal survey with mainly nominal items can be considered scientifically valid.

Awareness Construct

Allen and Seaman reported at length on their efforts to develop a reliable and valid subscale for measuring faculty knowledge of OER. They asserted that using a suite of complementary questions addressing OER awareness would provide a more accurate understanding of the respondents' actual knowledge about OER. In addition to the OER awareness item (Q13), other items queried respondents about OER concepts (Q15), licensing

mechanisms (Q12), and asked respondents to list OER of which they are aware. (Q14). (Survey Instrument: Appendix D.)

Allen and Seaman described their process for creating the central OER awareness question of the survey. The question was:

> How aware are you of Open Educational Resources (OER)? OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

The authors stated concerns about the wording of this question because their previous studies (Allen and Seaman, 2012; 2013) demonstrated that "many academics only have a vague understanding of the details of what constitutes OER" (pg. 9). There were further concerns about the question being clear but not "so detailed that the question itself educates the respondent sufficiently enough that they can claim to be 'aware'" (pg. 9).

Allen and Seaman (2014) tested several versions of this question including variants that were either too vague or far too leading for the respondents (p. 9). The authors concede that the final survey question may cause respondents to overstate their level of OER awareness but the researchers considered this preferable to overtly leading respondents. They asserted that adding additional questions about OER components, licensing types, and prompting respondents to list OER resources could be used to moderate the potential overestimation of OER awareness. In this study, these sets of questions were examined in more detail using statistical tests not used by Allen and Seaman in order to more fully address assertions made by Allen and Seaman in their report and to provide more complete insight into the respondents' actual awareness of OER.

Quantitative Data Analysis

The approach to this phase of the study was to replicate the methods used in Allen and Seaman's 2014 survey as closely as possible. The research questions for the quantitative phase of the study were:

> How do the faculty at the research site compare to Allen and Seaman's (2014) national sample on their knowledge, attitudes, and use of open educational resources?
> Does an association exist between the respondents' stated awareness of OER and their stated awareness of features and components of open educational resources?

In addition to providing permission to use the survey and providing the data from their 2014 national survey results, Allen and Seaman also provided the researcher with a sample from their original dataset that isolated the cases from public institutions. As with Spiviloy and Seaman's (2015) replication with higher education faculty in the state of North Dakota, the results of this survey replication was compared to a subset of Allen and Seaman's original dataset: those respondents employed at public institutions. This data set is located in Appendix F.

This survey research was exploratory in nature with exclusively nominal and ordinal level items. The preliminary data analysis procedures included screening the data for errors by reviewing the data for scores that were not within possible values and checking for and discarding unusable cases. Since the Allen and Seaman reported only percentages and since their data set did not include actual frequencies, exploratory techniques were employed to compare the local survey data to the national dataset. Non-parametric statistical methods were used to examine responses from the local sample in more detail.

Frequency tables reporting relative frequencies (proportions) were developed for each question. The percentage results from the local respondents were compared with the results from the national sample, when possible. Contingency tables were developed to more fully examine some responses. Chi-square testing was employed to examine Allen and Seaman's hypothesized association between the OER awareness variable and awareness of the Creative Commons. Additionally, chi square testing was employed to measure the local respondents' actual awareness of OER by examining the association between the OER awareness variable and awareness of OER components. The data were analyzed using SPSS Grad Pack software (IBM, 2015).

Measuring Awareness

In their report, Allen and Seaman stated that there is a "strong relationship between awareness of open educational resources and knowledge of Creative Commons licensing" (p. 17). To test this assumption, Allen and Seaman attempted to create a "stricter index" for OER awareness by removing from the OER awareness categories all respondents who reported they were unaware of the Creative Commons (p. 17). Allen and Seaman stated that this refinement resulted in a more accurate assessment of OER awareness. They found that when this stricter analysis of OER awareness was applied the overall level of OER awareness dropped, but only slightly.

Non-Parametric Methods

To test Allen and Seaman's hypothesis that awareness of OER and the Creative Commons are associated and to more accurately measure the local respondents' claims of OER

awareness in this study, the chi-square test of independence was applied. Since the variables being examined were nominal, no assumptions were made about population distribution, and since each case was independent, this non-parametric technique was appropriate. Three hypothesized associations were examined using the chi-square test of independence:

1.) Association between awareness of OER and the Creative Commons.

2.) Association between OER awareness and OER concepts.

3.) Association between awareness of OER and the ability to evaluate OER.

The chi-square test of independence was used to test the hypothesis that an association existed between the respondents' OER awareness and their knowledge of the Creative Commons. In order to create a two-by-two contingency table, the variables were filtered into awareness and non-awareness groupings. As mentioned in the study limitations, this created a false dichotomy that resulted in a loss of information and statistical power, but this loss had no significant bearing on the chi-square test results.

The 5-point scale response to the question, "How aware are you of open educational resources?" (Q13) was not entirely straightforward. Figure 3 illustrates how the responses were filtered into nominal variables: "aware" and "unaware."

Similarly, the 4-point scale question "How aware are you of the following licensing mechanism: Creative Commons?" (Q12) was filtered in aware/unaware categories. The response choices for this question were more obvious: Unaware-Somewhat Aware-Aware-Very Aware. The "unaware" response was filtered into a category unto itself and the remaining response choices were used to create the "aware" category for this variable. The transformed nominal scale data for both variables were used to create the two-by-two contingency table and the chi-square statistic was calculated.

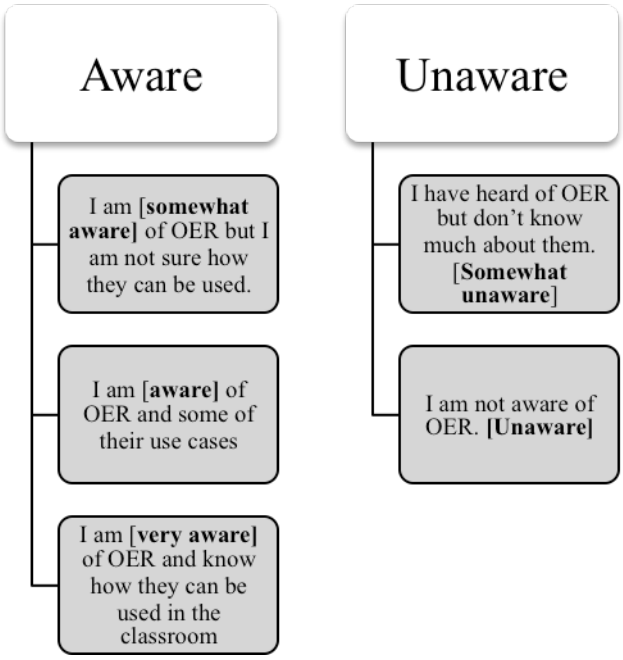


Figure 3: OER Awareness Categories

To evaluate the respondents' awareness of OER in more depth, the chi-square test of independence was also used to examine the association between OER awareness with responses to the question: "If you were to describe the concept of open resources for education to a colleague, which of the following would you include in your description?" (Q15). The concept that OER is "free" was associated with the OER awareness category, again filtered as above, to examine a hypothesized association between awareness of OER and the respondents' knowledge of OER concepts.

To confirm the respondents' lack of awareness of OER, the chi-square test of independence was also used to test a hypothesized association between the cases that reported lack of awareness of OER and the respondents' stated inability to evaluate the quality of OER (Q20).

The respondents' were also offered an open-ended text question that prompted them to list specific open educational resources of which they are aware. The qualitative results from the question will be quantified and discussed in relation to the overall awareness scores. This qualitative analysis is discussed in Chapters Five and Six of this study.

Quantitative Results

Demographics

The survey queried the respondents on the following demographic details: age, gender, tenure status, employment status, years teaching, types of courses taught, and primary discipline. In addition to simple frequencies, contingency tables were developed to more closely examine the demographics of the respondent population.

Employment Status

Of the 340 respondents who chose to answer this question, 54.7% (n = 154) stated they were employed full-time (Table 4); this number constitutes 52% of the full time faculty population at the research site (n = 297). From the population of 1400 part time faculty, 13% responded to the survey (n = 186). Six respondents opted to not respond to this question.

Gender and Age

The respondents were nearly equally split between the two gender choices: The original survey did not provide a response choice for other possible gender identities (Table 5). Around half of the respondents were over the age of 45 (Table 6).

Table 4

Demographics: Teaching Status

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Part-time	186	53.8	54.7	54.7
	Full-time	154	44.5	45.3	100.0
	Total	340	98.3	100.0	

Table 5

Demographics: Respondent Gender

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Male	165	47.7	47.8	47.8
	Female	180	52.0	52.2	100.0
	Total	345	99.7	100.0	

Table 6

Demographics: Respondent Age

		Frequency	Percent	Valid percent	Cumulative percent
Valid	25 - 34	34	9.8	10.0	10.0
	35 - 44	79	22.8	23.2	33.1
	45 - 54	93	26.9	27.3	60.4
	55+	135	39.0	39.6	100.0
	Total	341	98.6	100.0	

Years Taught

It is assumed that faculty stated their career total number of years teaching. It was not explicitly asked how many years the respondent worked at the research site. Senior faculty members, those who responded that they had taught 10 years or more, were prevalent in the responses (n = 221; 64.2%). Eight faculty members responded that they were new instructors with less than one year of experience (Table 7).

Tenure Status

Since Allen and Seaman's original survey audience was faculty at all types of institutions of higher education, several types of tenure scenarios were presented to the respondents. The research site does not employ full time faculty that do not have tenure or tenure-track status. Responses of "Not tenure track" and "N/A" were attributed to part time faculty. A contingency table was developed to confirm this (Table 8). Of the 186 part time

Table 7

Demographics: Years Taught

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Less than 1	8	2.3	2.3	2.3
	1 to 3	42	12.1	12.2	14.5
	4 to 5	24	6.9	7.0	21.5
	6 to 9	49	14.2	14.2	35.8
	10 to 15	76	22.0	22.1	57.8
	16 to 20	51	14.7	14.8	72.7
	More than 20	94	27.2	27.3	100.0
	Total	344	99.4	100.0	

faculty respondents, 98.4% stated that they were “not tenure track” or that the question was not applicable (N/A) to them. Three part-time respondents erroneously stated that they were tenured or had tenure-track status. Similarly three respondents who stated they were full-time erroneously selected the non-tenure track status choice.

Primary Discipline

The primary discipline categories in the original survey instrument did not exactly match the disciplines that Allen and Seaman reported (2014). For instance, the category “Professional” was included in the published report, as was “Liberal Arts & Sciences.” These categories were not included in the survey. Since it is unknown how Allen and Seaman decided

Table 8

Demographics: Tenure Status by Teaching Status

			Teaching status		
			Part-time	Full-time	Total
Tenure status	N/A	Count	95	0	95
		% within teaching status	51.1%	0.0%	27.9%
	Tenured	Count	2	132	134
		% within teaching status	1.1%	85.7%	39.4%
	Tenure track, not tenured	Count	1	19	20
		% within teaching status	0.5%	12.3%	5.9%
	Not tenure track	Count	88	3	91
		% within teaching status	47.3%	1.9%	26.8%
Total		Count	186	154	340
		% within teaching status	100.0%	100.0%	100.0%

to combine disciplines into these broader categories, a comparison of faculty responses by discipline cannot be made in this study.

Since the original survey instrument did not adequately represent the diversity of programs offered at the research site, the "Other" category had the highest responses (21.0%). This category may have included faculty from programs that did not fit neatly into the given discipline categories such as English as a Second Language (ESL), Speech Communications, Culinary Arts, Interior Design, and Library Science (Table 9).

Table 9

Demographics: Primary Discipline

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Arts and literature	40	11.6	12.0	12.0
	Business	19	5.5	5.7	17.7
	Computer and information science	15	4.3	4.5	22.2
	Economics	3	.9	.9	23.1
	Education	10	2.9	3.0	26.1
	Engineering / technical	21	6.1	6.3	32.4
	Humanities	25	7.2	7.5	39.9
	Law	5	1.4	1.5	41.4
	Languages/linguistics	11	3.2	3.3	44.7
	Mathematics	23	6.6	6.9	51.7
	Medicine	14	4.0	4.2	55.9
	Natural sciences	38	11.0	11.4	67.3
	Philosophy	2	.6	.6	67.9
	Psychology	11	3.2	3.3	71.2
	Social sciences	26	7.5	7.8	79.0
	Other	70	20.2	21.0	100.0
	Total	333	96.2	100.0	

Measuring Awareness

The Measuring Awareness section of Allen and Seaman's survey and report (2014) focused on faculty awareness of and knowledge about OER. The report highlights the national respondents' awareness of OER in general and their awareness of OER by age, and by discipline. To explore the respondents' knowledge of OER more in-depth, the respondents were also asked to select from a variety of characteristics that they would or would not use to

describe the concept of OER to a colleague such as, “is available for free,” “easy to modify,” “able to remix and repurpose,” etc. This section of the survey also posed awareness-related questions about licensing mechanisms including public domain, copyright, and creative commons.

OER Awareness

As previously described, Allen and Seaman’s survey question regarding OER awareness was based on the Hewlett Foundation’s definition of OER and was crafted through analysis of previous studies and pilot testing of the item (Allen and Seaman, 2014; Spivoloy and Seaman 2015). The researchers found that 64.4% of the national respondents from public institutions were unaware of OER, answering that they either had “heard of OER, but don’t know much about them,” or that they were not aware of OER at all.

Allen and Seaman reported that faculty at two-year public institutions reported higher levels of OER awareness than their peers at four-year institutions (p.13). Faculty working in two-year public institutions stated they were “very aware” at the same rate than those working in universities (7.4% versus 7.3%). Allen and Seaman found that 41.2% percent of community college instructors in the national sample reported some level of awareness. (Appendix F.)

The local respondents reported levels of OER awareness that were comparable to their national community college peers. As shown in Table 10, 46.7% of faculty in the local population reported some level of OER awareness; 7.5% reported they were “very aware.” About half of the faculty (53.4%) at the research site reported lack of awareness of OER, just slightly more aware than their national peers: locally, 29.3% reported they were “unaware of OER” as compared to 32.7% of the national sample.

Table 10

Awareness of Open Educational Resources

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Very aware of OER	26	7.5	7.5	7.5
	Aware of OER	69	19.9	20.0	27.5
	Somewhat aware of OER	66	19.1	19.1	46.7
	Somewhat unaware of OER	83	24.0	24.1	70.7
	Unaware of OER	101	29.2	29.3	100.0
	Total	345	99.7	100.0	

Awareness of Licensing

Allen and Seaman (2014) speculated than an association exists between awareness of OER and awareness of Creative Commons licensing (p. 16-18). Since knowing about the variety of licensing options that permit or restrict the use of educational materials is central to the selection of course materials generally, and of OER particularly, these questions are critical to determining the respondents' awareness of OER.

Allen and Seaman (2014) included questions in their survey to determine how aware faculty are of the most common licensing terms for educational materials: Public Domain, Copyright, and the Creative Commons. The researchers noted that although many respondents included the ability to remix/reuse in their descriptions of OER, less than a third of the national public sample included Creative Commons licensing in their description of OER components. Allen and Seaman found that most faculty report that they are aware of copyright laws regarding classroom content and are also aware of the terms of public domain, but "fall short"

on awareness of creative commons licensing, with about one-third of the national sample having stated that they were not aware of the Creative Commons (p.16).

The local respondents were similar to their peers in their awareness of licensing options for educational materials. They were most aware of copyright and public domain. More than one-third stated they are unaware of the Creative Commons (Figure 4).

Allen and Seaman observed that more faculty claimed awareness of the Creative Commons than awareness of OER. Allen and Seaman (2014) speculated that it appeared that "faculty have a much greater level of awareness of the type of licensing often used for OER than they do of OER itself […] they do not always associate this licensing with OER" (p. 16). This phenomenon was also true of the local respondents. Two-thirds of the local faculty claimed awareness of Creative Commons licensing and 46.6% claimed awareness of OER, but only 26.0% chose Creative Commons licensing as a descriptive component of OER (Table 11).

Measuring Awareness of OER and Creative Commons. As stated previously, Allen and Seaman attempted to connect knowledge of OER with awareness of the Creative Commons. To test Allen and Seaman's theory that there is an association between OER awareness and awareness of the Creative Commons, a chi-square test of independence was performed on the local data to compare the OER and Creative Commons awareness responses. The null hypothesis for the chi-square test was:

H_0 : Awareness of open educational resources and awareness of the creative commons are independent.

Using a confidence level of 95% ($p<0.05$), the chi-square test of independence indicated a statistically significant association between awareness of OER and awareness of the Creative Commons, χ^2 (1, n = 342) = 19.21, p= 0.001, *phi*=.237, allowing for the rejection of the null

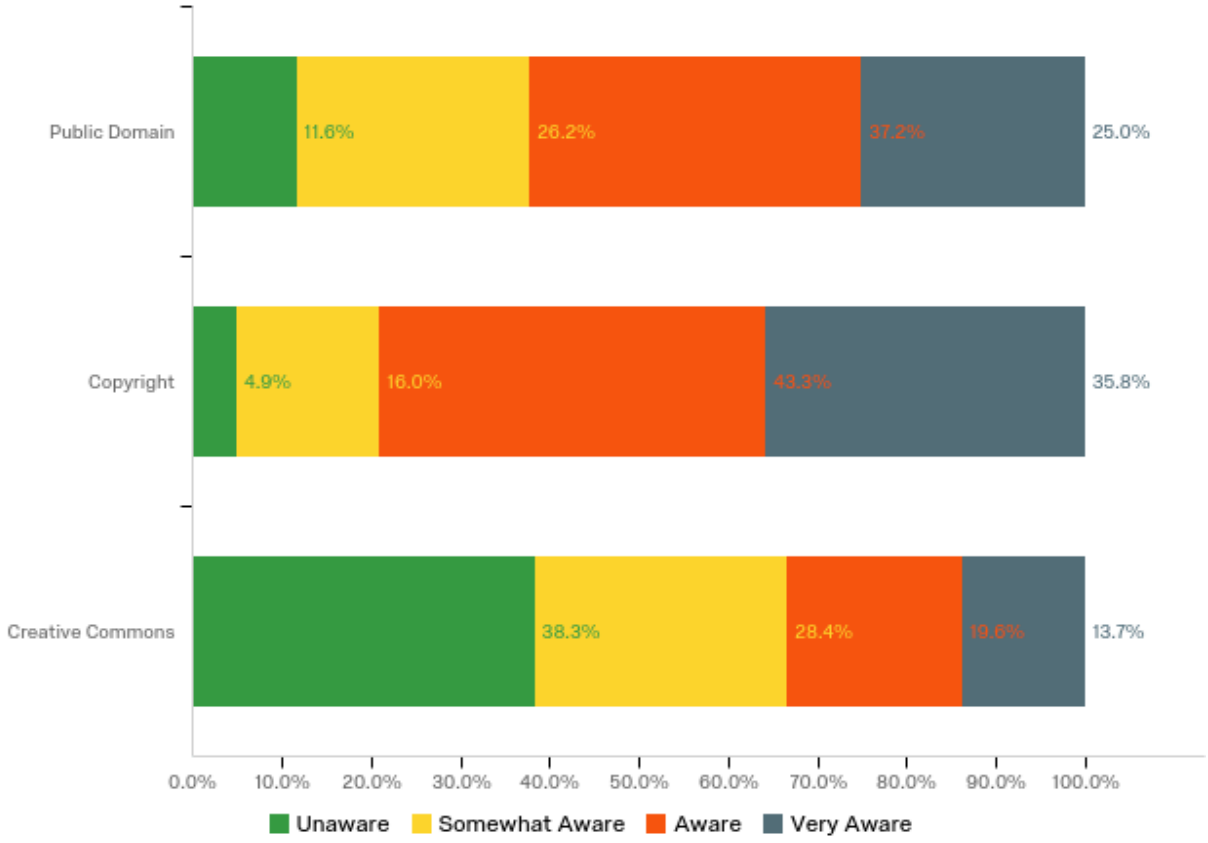


Figure 4: Faculty Awareness of Licensing of Educational Resources

Table 11

Results of Chi-Square Test of Independence and Descriptive Statistics for Awareness of OER and Awareness of the Creative Commons (n = 342)

OER awareness	Creative commons awareness	
	Not aware	Aware
Not aware	89 (49.2%)	92 (50.8%)
Aware	42 (26.1%)	119 (73.9%)

Note. χ^2 = 19.21, df = 1, *phi*= .237. Numbers in parentheses indicate column percentages.
*p < .05

hypothesis (Table 11). The effect size using the phi coefficient is moderate according to Cohen's (1992) criteria. With degrees of freedom equal to 1, this result indicates a moderate to large positive association between OER Awareness and Awareness of the Creative Commons. Given this positive association, it can be argued that Allen and Seaman were correct in assuming that lack of awareness of the most commonly used licensing scheme for OER is indicative of lack of knowledge of OER.

Components of OER

This survey question asked respondents to select which characteristics OER they would include, may or may not include, or would not include in their characterization of open educational resources:

> If you were to describe the concept of open resources for education to a colleague, which of the following would you include in your description?

Both local and national respondents' responded at similar rates to this question (Tables 12 and 13). Both groups stated that they would include "Is available for free," "has the ability to remix and repurpose," and "is easy to combine with other course materials" most frequently.

OER being free was most commonly selected characteristic to "include" by both the local group and national group: 71.4% of the local respondents and 72% of the national sample selected "is available for free" as the most common descriptor of OER. On the remaining OER component choices, both the local and national groups were predominately uncertain about whether or not they would include these characteristics in their description of OER.

Table 12

Local Group: Description of Open Resources

	Would include	May or may not include	Not included
Is available for free	71.4%	26.4%	2.2%
Is easy to combine with other course materials	51.1%	38.4%	10.5%
Has the ability to remix and repurpose	47.6%	44.1%	8.4%
Is easy to modify	41.2%	46.9%	11.9%
Is of high quality	39.2%	47.6%	13.2%
Is more up to date than textbooks	36.3%	48.9%	14.8%
Is provided with a creative commons license	26.0%	50.3%	23.7%

Table 13

National Group: Description of Open Resources

	Would include	May or may not include	Not included
Is available for free	72.4%	24.3%	3.3%
Has the ability to remix and repurpose	55.5%	36.2%	8.3%
Is easy to combine with other course materials	54.8%	38.9%	6.4%
Is easy to modify	45.5%	43.8%	10.7%
Is of high quality	41.0%	47.7%	11.2%
Is more up to date than textbooks	35.5%	49.3%	15.2%
Is provided with a creative commons license	29.1%	47.4%	23.6%

Note. *Frequencies not available for the national sample.

OER Awareness and Descriptions of OER

Asking respondents to describe OER using basic characteristics assisted in assessing the respondents' awareness of OER. The statements "would include" and "not included" in reference to their descriptions of OER are definitive answers. The response "may or may not include" indicated uncertainty. It could be argued that this uncertainty could further confirm lack of awareness of OER. To test this assumption, the response "is available for free," the choice that the majority of respondents chose most frequently to include, was examined in relation to the respondents' reported awareness of OER.

A chi-square test of independence was performed on the cases that reported that they "may or may not" include OER being freely available and those cases which reported lack of OER awareness to determine if there was an association between these two variables. The null hypothesis for the chi-square test was:

H_0: Unawareness of OER and uncertainty about OER being freely available are independent.

Using a confidence level of 95% ($p < .05$), the chi-square test of independence indicated a statistically significant association between unawareness of OER and uncertainty about OER being available for free, χ^2 (1, n = 322) = 11.56, p= .001, *phi*=.190, thus the null hypothesis was rejected (Table 14). With degrees of freedom equal to 1, the effect size using the phi coefficient (.190) indicates a small to moderate positive association between the OER awareness and the "freely available" variables according to Cohen's (1988) criteria.

Table 14

Results of Chi-Square Test of Independence and Descriptive Statistics for Unawareness of OER and Uncertainty of OER Being Freely Available (n = 322).

Unaware of OER	OER free: may or may not include (uncertainty)	
	Not selected	Uncertainty
Not aware	129 (82.2%)	28 (17.8%)
Aware	108 (65.5%)	57 (35.5%)

Note. $\chi^2 = 11.56$, df = 1, *phi*= .190. Numbers in parentheses indicate column percentages.
*p < .05

Age and OER Awareness

In their report, Allen and Seaman (2014) explored the assumption that the youngest faculty are likely "the most digitally aware, and have had the most exposure to and comfort in work with digital resources" and would likely be more aware of OER based on their digital awareness (p. 11). Though exposure to and comfort with digital resources is not strictly related to awareness of OER, Allen and Seaman reported that it was, in fact, the oldest faculty group (55+) in the national sample that had the greatest degree of awareness of OER. In contrast with the national results, the youngest and oldest groups combined reported lack of awareness at greater rates than the middle group of respondents (aged 35-54). (Table 15).

Role in Educational Resources Selection

Another main topic area in Allen and Seaman's (2014) report examined control over selection of course resources.

Table 15

Awareness of OER by Respondents' Age

			Age				
			25 - 34	35 - 44	45 - 54	55+	Total
Aware: OER	Very aware of OER	Count	1	5	6	13	25
		% within age	2.9%	6.3%	6.5%	9.6%	7.3%
	Aware of OER	Count	9	17	19	23	68
		% within age	26.5%	21.5%	20.4%	17.0%	19.9%
	Somewhat aware of OER	Count	5	18	18	25	66
		% within age	14.7%	22.8%	19.4%	18.5%	19.4%
	Somewhat unaware of OER	Count	8	22	30	23	83
		% within age	23.5%	27.8%	32.3%	17.0%	24.3%
	Unaware of OER	Count	11	17	20	51	99
		% within age	32.4%	21.5%	21.5%	37.8%	29.0%
Total		Count	34	79	93	135	341
		% within age	100.0%	100.0%	100.0%	100.0%	100.0%

Questions:

Who has a role in selecting educational resources for use in the courses that you teach?

Who has a primary role in selecting educational resources for use in the courses that you teach?

Allen and Seaman reported that 81.3% of public community college instructors have a role in the selection of course resources (Appendix F). In this multiple selection question, faculty at research site reported themselves, another faculty member, and/or a faculty committee as having a role in decision-making about resources (Table 16). The local sample's response to administrator involvement in selection of resources also illustrates faculty control over educational resources selection as compared to the national sample. The national sample

responded that 9.2% believe that administration has a decision-making role as compared to the local group's response of 7.3%.

Table 16

Local Group: Role in Selecting Educational Resources

	Frequency	%
Me	279	81.1%
Program or division	124	36.0%
A faculty committee	91	26.5%
Another faculty member	76	22.1%
Administration	25	7.3%
Instructional design group	9	2.6%
Other	9	2.6%

Allen and Seaman stated that the faculty role in resource selection is directly related to OER adoption in that these individuals "see themselves as the decision-makers for the use of OER in their courses" (pg. 5), though the actual survey questions did not explicitly include language addressing OER selection. Although OER is obviously option for faculty to choose for their courses, the survey questions did not specifically ask the respondents if they see themselves as having complete control over the adoption of OER.

Primary Role in Resource Selection

When asked who has the *primary* role of resource selection, 64.3% of faculty at the research site stated that they as individuals have control over the materials used in their courses. As shown in Table 17, other primary decision makers reported included the program or division (16.8%) or a faculty committee (11.0%). These results were similar to the national group (Appendix F).

Table 17

Primary Role in Resource Selection

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Me	222	64.2	64.3	64.3
	Another faculty member	18	5.2	5.2	69.6
	A faculty committee	38	11.0	11.0	80.6
	Program or division	58	16.8	16.8	97.4
	Instructional design group	2	.6	.6	98.0
	Administration	4	1.2	1.2	99.1
	Other	3	.9	.9	100.0
	Total	345	99.7	100.0	

Allen and Seaman discussed the possible reasons for varying levels of faculty control of resource selection by discipline area. Though their survey did not address this idea directly, Allen and Seaman explained that the variance between disciplines is likely due to the nature of the curriculum: a committee typically selects resources for large introductory-level courses with each instructor using the same material. Additionally, programs that have specific

licensing or credentialing requirements are also selected by committee or are strongly influenced by the accrediting agency (p. 7). Again, since the discipline categories provided in the survey did not coincide with the research site's curriculum and since there were discrepancies in this area of Allen and Seaman's data, assumptions about the relationship between disciplines and control over resource selection could not be made.

Selection Factors

As discussed in Chapters One and Two, instructors consider a variety of factors when they are selecting materials for their courses. In Allen and Seaman's national sample of public institutions the following three selection factors were considered most important: proven efficacy (58.9%), trusted quality (48.5%), and subject coverage (39.5%). (Appendix F.) As shown in Figure 5, faculty at the local research site also selected the factors trusted quality (51.5%) and subject coverage (50.3%) in their top three selections. The local population differs from the national sample on two important points. Currency of subject material (43.6%) was the third most selected factor in resource selection for the local group, as compared to only 3.3% of their peers nationally. In the national group, cost was one of the factors considered least often in resource evaluation (2.7%) whereas the local faculty considered cost as their fourth most important factor (27.5%).

Use of Open Educational Resources

In this section, respondents were queried on their use of OER materials as either primary course materials and/or secondary course materials. The following questions were posed:

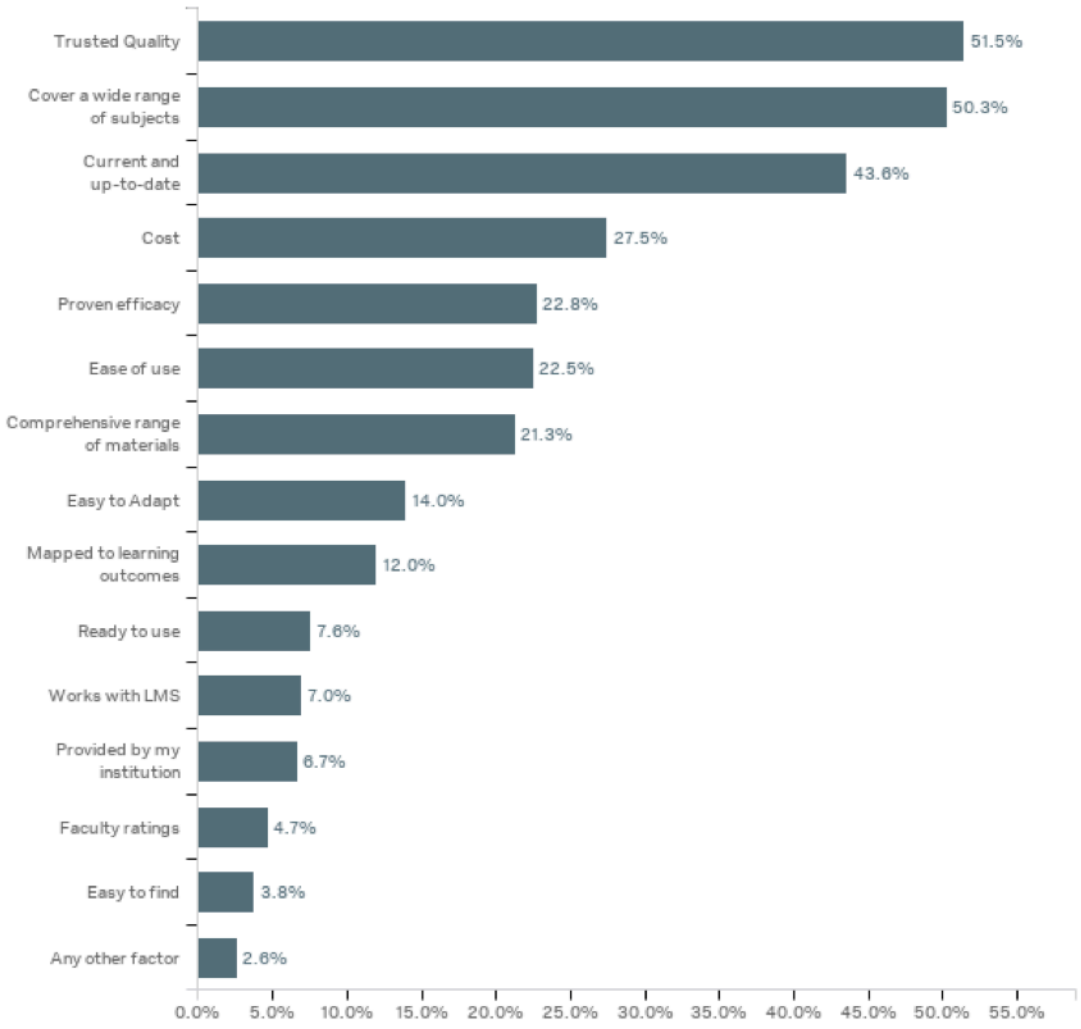


Figure 5: Criteria for Selecting Teaching Resources

Have you used OER as primary course material (main class material used by teacher and students)?

Have you used OER as secondary course material (supporting material to enhance teaching or as reference for students)?

In their report, Allen and Seaman stated that it is likely that faculty have a “less-than-perfect” understanding of what open educational resources are because more than one-half of the

national public sample report that they use OER as either primary or secondary course materials but only 35% claimed to be aware of OER (p. 19). Allen and Seaman ask, "How is it that there are more faculty who are using OER than there are who say that they are aware of what it is?" (p.19).

Allen and Seaman further speculated that the respondents do not have a clear understanding of OER and that faculty make resource choices without considering the licensing of the resources they select. They assumed that faculty over-reported their actual use of OER because, for instance, a faculty member may choose a freely available resource and consider that resource OER, without actually determining if it has open licensing.

The local sample reported use of OER at the same rate as their national peers. Around 18% of respondents reported regular or occasional use of OER as primary course material, while around one-third state they use OER as secondary course material. In comparing their OER awareness scores to their reported use of OER materials, it appears that like their peers nationally, the local faculty may have also over-reported their use of OER materials (Tables 18 and 19). Around 20% of respondents who stated they were somewhat unaware or completely unaware of OER also stated they regularly or occasionally use OER as primary course material. This phenomenon is confirmed by the instructors' responses to the qualitative survey questions that will be discussed in subsequent chapters of this report.

As noted previously, about half of the local respondents stated they were unaware of OER and their reported use confirms this lack of awareness. Conversely, though, those instructors who claim awareness of OER are not using OER at a much greater rate than their less-aware peers. As shown in Tables 18 and 19, only five respondents who stated they are very aware of OER regularly use open materials as primary resources and 11 of these very aware

Table 18

Aware of OER by Use of OER as Primary Course Material

			Use of OER: primary course material				
			Never / NA	Rarely	Occasionally	Regularly	Total
Aware: OER	Very aware of OER	Count	9	0	12	5	26
		% within aware: OER	34.6%	0.0%	46.2%	19.2%	100.0%
	Aware of OER	Count	43	9	9	7	68
		% within aware: OER	63.2%	13.2%	13.2%	10.3%	100.0%
	Somewhat aware of OER	Count	49	7	5	3	64
		% within aware: OER	76.6%	10.9%	7.8%	4.7%	100.0%
	Somewhat aware of OER	Count	62	11	5	3	81
		% within aware: OER	76.5%	13.6%	6.2%	3.7%	100.0%
	Not aware of OER	Count	85	4	4	7	100
		% within aware: OER	85.0%	4.0%	4.0%	7.0%	100.0%
Total		Count	248	31	35	25	339
		% within aware: OER	73.2%	9.1%	10.3%	7.4%	100.0%

Table 19

Aware of OER by Use of OER as Supplementary Course Material

			Use of OER: supplementary course material				
			Never / NA	Rarely	Occasionally	Regularly	Total
Aware: OER	Very aware of OER	Count	3	3	9	11	26
		% within aware: OER	11.5%	11.5%	34.6%	42.3%	100.0%
	Aware of OER	Count	22	11	21	15	69
		% within aware: OER	31.9%	15.9%	30.4%	21.7%	100.0%
	Somewhat aware of OER	Count	28	12	17	6	63
		% within aware: OER	44.4%	19.0%	27.0%	9.5%	100.0%
	Somewhat unaware of OER	Count	47	20	10	5	82
		% within aware: OER	57.3%	24.4%	12.2%	6.1%	100.0%
	Unaware of OER	Count	77	5	12	5	99
		% within aware: OER	77.8%	5.1%	12.1%	5.1%	100.0%
Total		Count	177	51	69	42	339
		% within aware: OER	52.2%	15.0%	20.4%	12.4%	100.0%

respondents are using OER as supplemental material.

Use of OER by Discipline

As stated in Chapter One, comparison of teaching disciplines for the local and national samples do not align so they cannot be compared. However, Allen and Seaman did find that the use of OER is fairly consistent across all disciplines in their national sample.

Use of OER Types

OER materials are available in a variety of formats such as texts, videos, images, study aids, etc. To clarify their OER use, respondents were asked to select from a variety of OER resource types that they use in their teaching. Faculty who reported OER use as primary or secondary course materials (regularly, occasionally, or rarely) were asked to detail which types of OER resources they have used and those types they have not used. (Those who reported that they have *never used* OER were not offered this question.) Respondents were also given an open-ended question inviting them to provide specific examples of OER resources of which they are aware. The responses to this open-ended question are analyzed in Chapter Five.

Questions:

"Have you used any of the following types of open educational resources?"

"Please provide examples of open educational resources that you are aware of."

Allen and Seaman found that 90% of the national public faculty reported that they used OER images and videos most often, followed by video lectures and tutorials. The local faculty responded the same as their national peers: from the list of OER types, they stated affirmatively that they used images most frequently, followed by videos, and video tutorials/lectures (Figure 6). The local group stated that they were least inclined to use OER whole courses unlike the national group who used slides and class presentations least often.

Assessment of Educational Resources

This section of the survey asked faculty to rate the quality of both traditional course resources and open educational resources. There were some issues with the responses

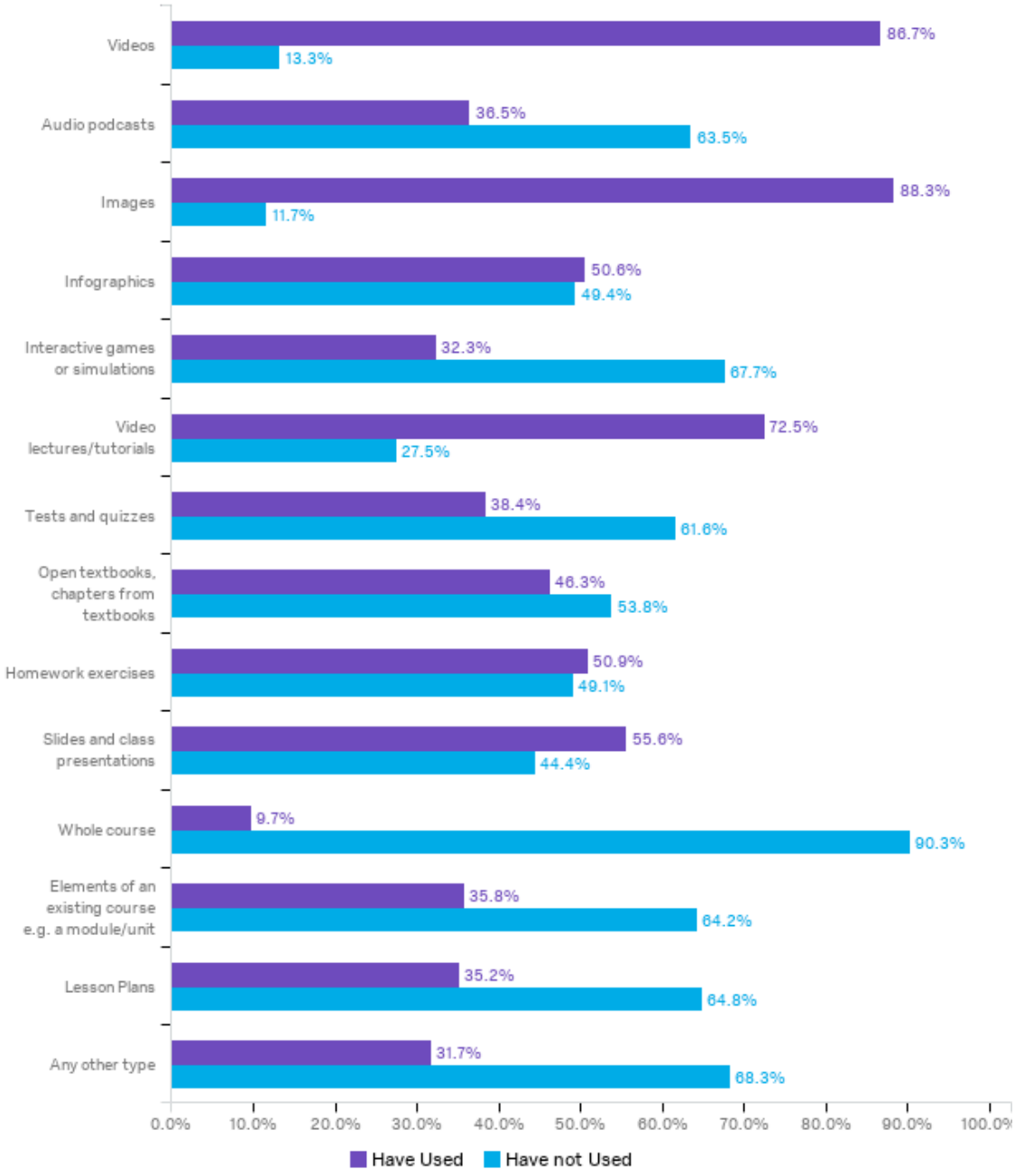


Figure 6: Types of OER Used

documented in Allen and Seaman's national public data set that prohibited the comparison of the national and local faculty on the questions in this section.

First, Allen and Seaman did not report the response rates for the fourth response choice offered in the survey for the question that compared quality of both types of resources on a variety of dimensions. The response choice, "No Opinion/Don't Know" did not appear in their data set or in their published report. Faculty not having an opinion or not knowing enough to judge was a very important data point to address the research questions for this study, so this response choice was included in this analysis.

Second, Allen and Seaman also changed the titles of the OER "dimensions" in their final report from those that were used in the survey, likely for brevity. Since they did not offer a rationale for altering the titles of these items and since their strategy for renaming the items was not apparent, comparison of the national and local faculty cannot be made on these variables either. However, a general comparison can be made on some of the major points of this section of the survey and the OER dimensions for the local group was reported as they appeared in the survey.

Third, Allen and Seaman's wording of the second assessment question was somewhat problematic. This question asked faculty to rate the perceived quality of OER and the quality of materials from traditional publishers. The first question in this set asked faculty to rate OER vs. traditional *resources*, which is a quite general in scope. In the second question, however, Allen and Seaman changed this language to "materials by traditional *publishers*." Respondents could have perceived these two questions quite differently. Since the tension between academic publishers and faculty/students is well documented, as noted in Chapter One, faculty could have been biased in their responses—critiquing educational publishers rather than rating the

relative quality of the published materials. Comparisons between the local and national groups were made when possible in this section.

Comparing Quality of Resources

The question was:

> How would you compare the quality of open educational resources to that of traditional resources on the following dimensions?

Faculty who reported awareness of open educational resources were asked to compare the quality of traditional resources and open educational resources on a variety of dimensions using a four-point scale: OER Superior, About the Same, Traditional Superior, No opinion/don't know.

Keeping in mind that the "No opinion/Don't Know" response choice was not included in the dataset, Allen & Seaman reported that eighty-five percent of the national public faculty considered OER far superior to traditional resources on the dimension of "cost." They also reported that 50.2% of the national faculty respondents also found OER superior on the dimension "materials are rated by faculty or editors" and also superior on currency (39.6%) and ease of use (26.9%) The national faculty rated OER and materials from traditional publishers to be about equal in quality on the dimensions "easy to find," "proven efficacy," and "works with LMS." Traditional materials were considered superior to OER on the remaining dimensions, "mapped to learning outcomes," "trusted quality," "range of materials," and "wide adoption."

As shown in Table 20, the local faculty agreed with their national peers that OER was superior to traditional materials on the dimension of cost. The local faculty also stated that OER was superior on the dimension "adaptable/editable" (this variable was included in the

survey, but was not included in Allen and Seaman's dataset). The dimension "includes all the material I need" was the only area in which that faculty rated traditional materials superior (31.0%). Aside from these three dimensions, the local respondents most frequently stated that they believed OER and traditional resources were either "about the same" or that they had no opinion / did not know on the remaining dimensions (Figure 7).

Rating OER and Traditional Publishers

The question was:

How would you rate the quality (factually correct, up-to-date, well-written, organized, effective) of open educational resources and materials from traditional publishers? (OER vs. Traditional)

The response choices for this question were on a five-point scale: Poor, Average, Good, Excellent, Don't Know. Allen and Seaman compared the ratings of OER vs. materials produced by traditional publishers to determine how "faculty rank each type of resource relative to the other" (pg. 25).

Allen and Seaman found that about one-third of the national public faculty responded they could not rate the quality of materials by traditional publishers, and more than half of the national group stated that they could not rate the quality of OER. Allen and Seaman's national public faculty data showed that approximately one-third of their respondents found traditional resources "good" and the remaining respondents rated traditional resources as "excellent" (16.7%), "average" (13.1%), or "poor" (1.1%). For those respondents who could rate OER quality, Allen and Seaman found that about one-quarter of their respondents perceived OER as "good" quality while the remaining respondents rated it average (9.3%) or poor (1.3%).

Table 20

Comparison of OER to Traditional Resources

	About the same	No opinion/ don't know	OER superior	Traditional superior
Cost	3.8%	19.7%	75.2%	1.3%
Adaptable/editable	25.8%	27.7%	43.9%	2.6%
Current and up-to-date	37.4%	23.2%	31.6%	7.7%
Easy to use	40.6%	25.8%	26.5%	7.1%
Easy to find	40.4%	21.8%	20.5%	17.3%
Covers my subject area sufficiently	37.4%	25.2%	11.0%	26.5%
Proven to improve student performance	35.5%	48.4%	11.0%	5.2%
Includes all the materials I need	29.7%	30.3%	9.0%	31.0%
High-quality and factually correct	43.9%	24.5%	9.0%	22.6%
Works with my institution's learning management system [LMS]	26.3%	55.1%	9.0%	9.6%
Mapped to learning outcomes	32.9%	45.2%	7.7%	14.2%
Materials are rated by faculty or editors	24.8%	49.0%	4.6%	21.6%

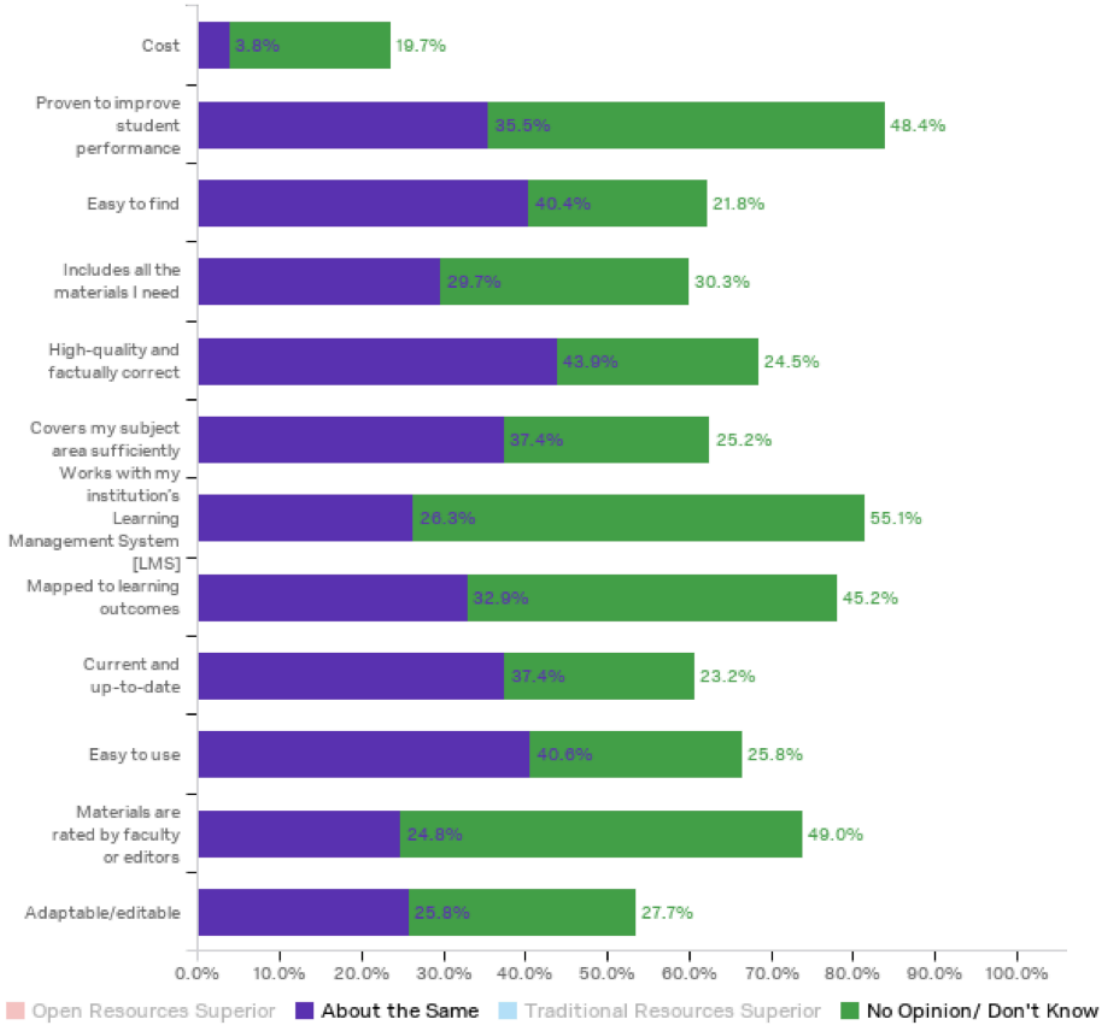


Figure 7: OER vs. Traditional Resources: About the Same and No Opinion/Don't Know

The local faculty responded similarly. A little over half stated they could not rate OER and about one-third stated they could not rate the quality of traditional publishers' resources. (Figure 8). About one-third of the local faculty rated both OER and traditional resources as good or average. About 18% rated traditional publisher resources as excellent while 7.7% gave OER that high ranking. The local respondents were a bit harsher in their judgment of traditional

publishers' materials than their national peers, with 2.6% rating the quality of traditional publishers' materials as "poor."

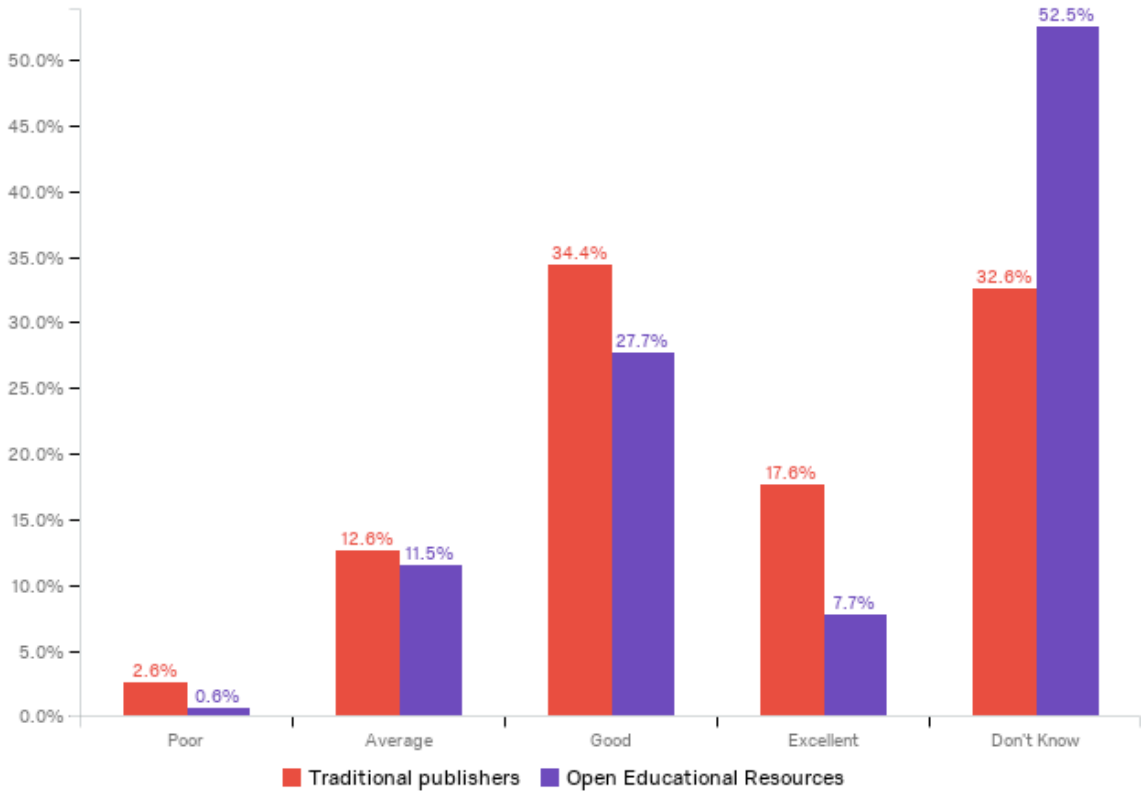


Figure 8: Quality Rating of OER vs. Traditional Publisher Materials

Awareness of OER and Rating of OER Quality

To provide further confirmation of the local respondents' awareness of OER, a chi-square test of independence was performed on the cases that stated they were unaware of OER and those who reported they did not know the quality of OER. The null hypothesis for the chi-

square test was: H_0: Unawareness of OER and lack of knowledge about OER quality are independent.

Using a confidence level of 95% ($p < .05$), the chi-square test of independence indicated a statistically significant association between OER awareness and lack of awareness of OER quality, χ^2 (1, n = 339) = 56.49, p= .001, *phi=.408,* allowing for the rejection of the null hypothesis. The effect size using the phi coefficient was moderate according to Cohen's (1992) criteria. Given the degrees of freedom equal to 1, this result indicates a moderate positive association between OER quality and OER awareness. This outcome confirms that lack of awareness of OER and the respondents' inability to gauge OER quality are associated (Table 21).

Table 21

Results of Chi-Square Test of Independence and Descriptive Statistics for Unawareness of OER and Uncertainty About OER Quality (n = 339)

Unaware of OER	OER quality= "don't know"	
	All other responses	Don't know
Aware	109 (69.4%)	48 (30.6%)
Not aware	52 (28.6%)	130 (74.1%)

Note. χ^2 = 56.41, df = 1, *phi*= .408. Numbers in parentheses indicate column percentages.
*p < .05

Table 22 includes all OER awareness categories. This contingency table illustrates that some faculty who claim awareness of OER seem to have overstated their knowledge of OER.

When all categories of OER awareness are combined, 26.9% of faculty who claimed some awareness of OER also stated they did not know the quality of OER.

Table 22

OER Awareness by OER Quality Rating="Don't Know"

			OER quality rating		
			All other responses	Don't know	Total
Aware: OER	Very aware of OER	Count	21	4	25
		% within OER quality rating	13.0%	2.2%	7.4%
	Aware of OER	Count	53	15	68
		% within OER quality rating	32.9%	8.4%	20.1%
	Somewhat aware of OER	Count	35	29	64
		% within OER quality rating	21.7%	16.3%	18.9%
	Somewhat unaware of OER	Count	28	54	82
		% within OER quality rating	17.4%	30.3%	24.2%
	Unaware of OER	Count	24	76	100
		% within OER quality rating	14.9%	42.7%	29.5%
Total		Count	161	178	339
		% within OER quality rating	100.0%	100.0%	100.0%

Barriers to OER Adoption

This question was offered only to those respondents who stated some level of awareness of OER:

> What are the three most important deterrents to the use of Open Educational Resources in your courses?

On this question, the local and national groups ranked the top four barriers to using OER at the same rate. As shown in Figure 9, the local group reported that the lack of a comprehensive OER catalog was their top barrier to adoption. The second and third top barriers for both the national and local groups were "too hard to find what I need" and "not enough resources for my subject." Like their national peers, the local faculty were also unsure of how to determine if they are allowed to "use or change" materials selecting this barrier as their fourth most prevalent obstacle to OER adoption. Of the national faculty Allen and Seaman stated, "the level of concern drops considerably after these top four issues" (p.28). This was also true of the local group.

Discoverability

Allen and Seaman anticipated that a major obstacle to OER adoption would be locating appropriate materials and asked faculty to rate the barrier "ease of searching" for both traditionally published materials and OER on a four-point scale from "Very Difficult" to "Very Easy." These questions, according to Allen and Seaman, addressed the importance of understanding "how this dimension compares to ease of finding and selecting the more traditional resources that faculty are already using" (p.29):

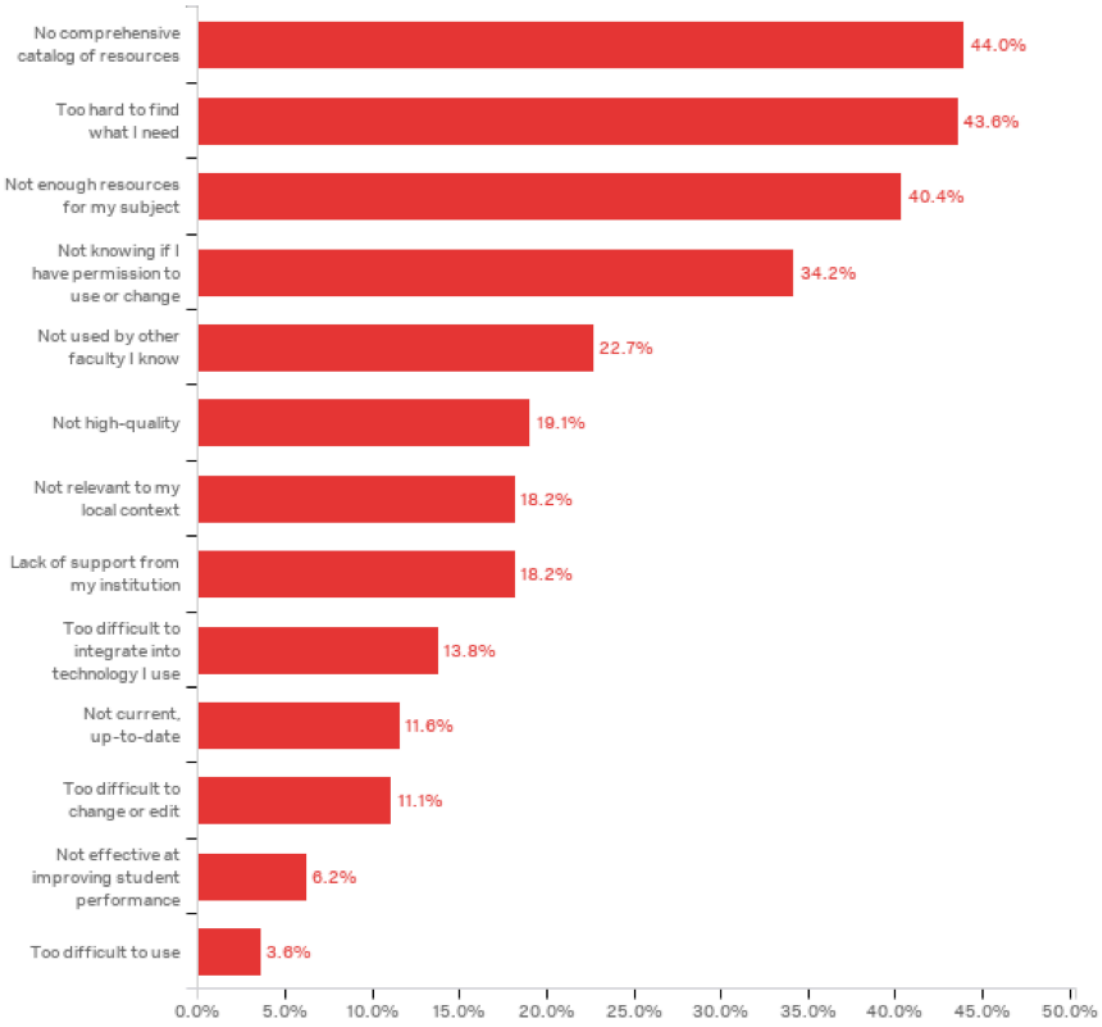


Figure 9: Barriers to OER Adoption

How would you rate the ease of searching for education resources for your courses? OER.

How would rate the ease of searching for education resources for your courses? Traditional Publishers.

Around three-quarters of the both the national and local groups reported that they found searching for resources from traditional publishers "easy" or "very easy," and around a quarter of both groups found searching difficult (Figure 10). Only a small percentage of both groups found searching for resources from traditional publishers to be "very difficult." A majority of faculty from both groups responded that they found searching for OER "easy" but this is less than the proportion of faculty who reported that searching traditional publishers was simple. More faculty in both groups rated searching for OER "difficult" (Local 36.3%; National 31.7%) as compared to the quarter of faculty who gave searching traditional publishers this rating. Local faculty reported that searching for OER is "very difficult" at about the same frequency as the national public faculty (Local 4.8%; National 5.1%).

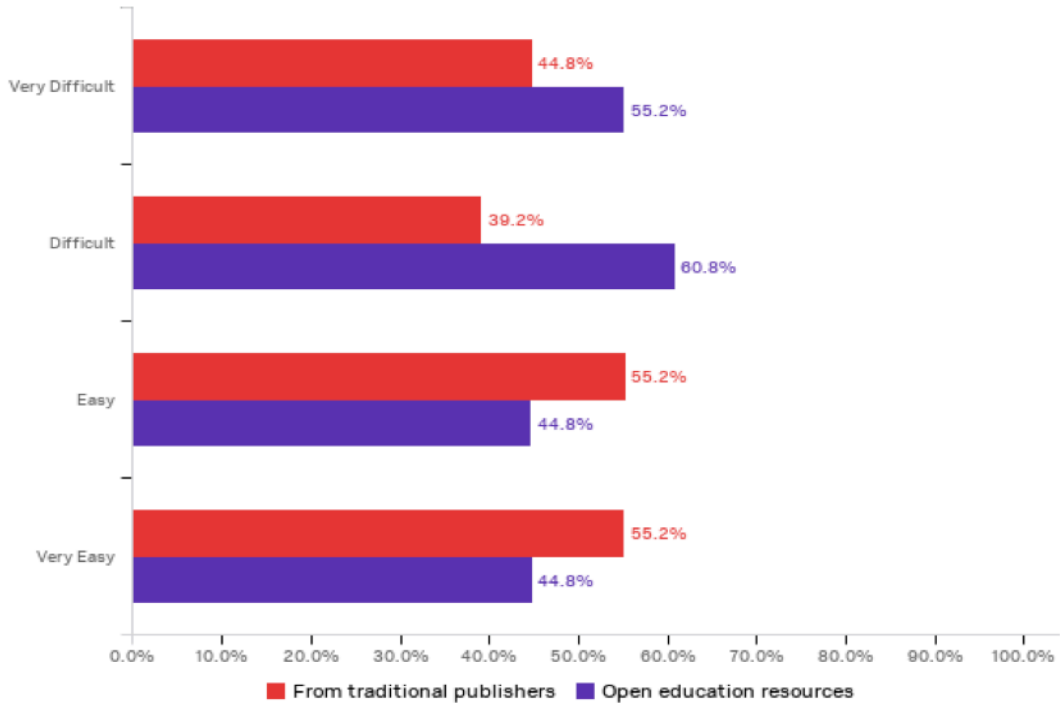


Figure 10: Ease of Searching, OER and Traditional Materials

Future Use of OER

Respondents who reported that they are not current users of OER were asked:

Do you think you will use OER in the next three years?

[I am not interested, I might consider using, I will consider using, No opinion / Don't Know].

The majority of non-users of OER in both groups responded that they would consider or might consider using OER (Local: 72.5%; National: 77.8%). In the national group, 15.3% of respondents stated that they had no opinion or did not know if they would consider using OER in the coming three years and 7.0% reported lack of interest. The local group responded similarly, as illustrated in Figure 11.

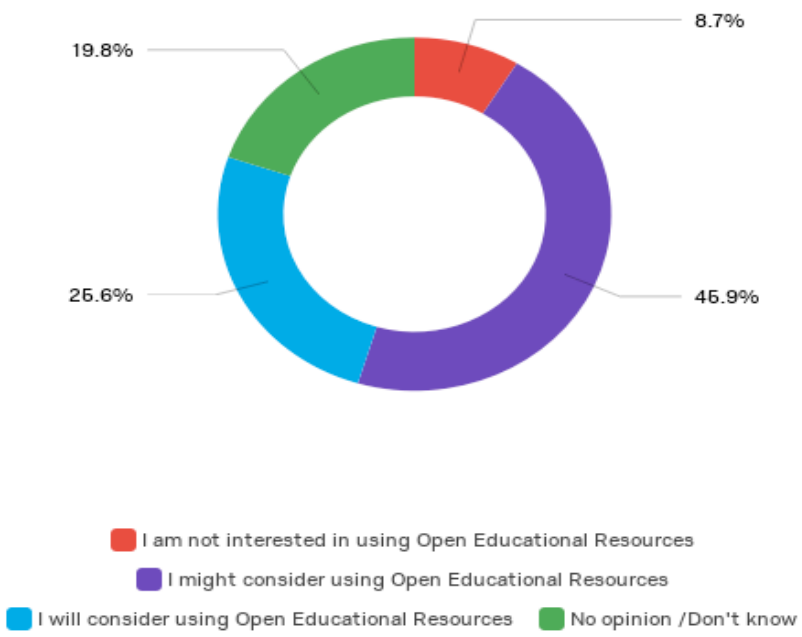


Figure 11: Non-Users Predict Future Use of OER

Non-Users' Awareness of OER

This question was not addressed in Allen and Seaman's report. To determine if lack of OER awareness had an impact on the non-users' predictions about their OER use in the future, the responses to this question were examined in relation to OER awareness (Table 23). Of the respondents who stated they did not know or have an opinion about their future use of OER, nearly one-third also stated they were unaware of OER.

Table 23

OER Use in 3 Years by Awareness of OER

		Awareness of OER				
OER in 3 years?		Aware	Somewhat aware	Somewhat unaware	Unaware	Total
No opinion /don't know	Count	1	4	5	24	34
	% within aware:OER	4.5%	15.4%	10.9%	32.0%	19.8%
I will consider using OER	Count	9	5	11	17	44
	% within aware:OER	40.9%	19.2%	23.9%	22.7%	25.6%
I might consider using OER	Count	9	15	27	27	79
	% within aware:OER	40.9%	57.7%	58.7%	36.0%	45.9%
I am not interested in using OER	Count	3	2	3	7	15
	% within aware:OER	13.6%	7.7%	6.5%	9.3%	8.7%
Total	Count	22	26	46	75	172
	% within aware:OER	100.0%	100.0%	100.0%	100.0%	100.0%

Of the 172 respondents who stated that they do not use OER, 123 stated that they would (25.6%) or might consider (45.9%) using OER, regardless of their awareness. The highest percentage of non-OER users who stated they would or might consider using OER were also those who stated they were either somewhat aware or somewhat unaware of OER.

Faculty Attitudes

This open-ended text question asked respondents to state their opinion of the issues covered in the survey:

> Your comments are welcome. Please let us know your thoughts on any of the issues covered in this survey.

The responses to this question will be analyzed and discussed in Chapter Five of this report.

Summary of Quantitative Findings

Two questions guided the quantitative phase of this mixed methods study:

> How do the faculty at the research site compare to Allen and Seaman's (2014) national sample on their knowledge, attitudes, and use of open educational resources?
>
> Does an association exist between the respondents' stated awareness of OER and their stated awareness of common features and components of open educational resources?

Overall, the local group responded similarly to Allen and Seaman's (2014) survey as their national peers. The most marked difference between the two groups was in their ranking of criteria they used in selecting educational resources.

Demographics

Of the 346 respondents who completed the survey, 154 were full time faculty and 186 were part time faculty. (Six respondents opted to not answer the employment status question.) Given the possible population of respondents (290 full time and 1400 part time faculty), the ratio of full to part time faculty was unremarkable because the responses of two groups were not compared (Table 4). The gender responses were nearly evenly split between the two response choices. The mid-age grouping and older (45-55+) was the largest group of respondents. Senior faculty members, those who had taught more than 15 years or more, responded at a higher rate than those who had taught less than 15 years.

Since the academic discipline choices provided in Allen and Seaman's original survey did not align with the local research site, comparisons of questions relating to disciplines could not be made in this research. The original survey instrument did not adequately represent the diversity of programs offered at the research site and despite slight alterations/clarifications made by the researcher to the survey instrument; the "Other" category, which captured respondents whose programs were not represented in the survey, had the highest number responses (Table 9).

Quantitative Research Question 1

Two questions guided the quantitative phases of this mixed methods study. The first question was:

> How do the faculty at the research site compare to Allen and Seaman's (2014) national sample on their knowledge, attitudes, and use of open educational resources?

The faculty members at the research site (n = 346) responded similarly to most survey questions as Allen and Seaman's (2014) national sample. The following is a summary of the analysis of each major section of the survey.

OER Awareness

Allen and Seaman found that 41.8% of community college faculty reported some level of awareness of OER. The faculty at the research site reported lack of awareness at similar rates to their national peers. In the local sample, 46.7% reported awareness. Only 7.5% of the local sample reported they were "very aware" of OER (Table 10). About one-third of both the local and national groups stated they were unaware of OER.

In their report, Allen and Seaman lamented that faculty were likely overstating their awareness of OER because they assumed from their data that educators tend to believe that any freely available resource is an open resource because they are generally unaware of the features and components of OER. This assumption is also likely true of some of the local respondents. For instance, nearly one-third of the local respondents who stated they did not know the quality of open resources also stated they were aware of OER (Table 22).

In reference to common resource licensing types, the local and national groups were again similar in their stated knowledge. Both groups were most aware of copyright and public domain and were least aware of the Creative Commons. One-third of faculty in both groups reported lack of awareness of the most common licensing type for OER materials (Figure 2). Allen and Seaman theorized that lack of awareness of the Creative Commons and lack of awareness of OER were related. As discussed in the second quantitative research question of this study, Allen and Seaman's assumed relationship was shown to be true of the local sample.

In their report, Allen and Seaman assumed that age and awareness of OER were related, stating that younger faculty would be more aware of OER because younger people are "more digitally aware" (p. 11). This assumption proved to be incorrect in both the national and the local sample. The oldest respondents (55+) in the national faculty group proved to be most aware of OER while the middle age group (35-54) in the local sample was most aware of OER (Table 15).

When asked to describe OER using a variety of common characteristics, the local group again responded similarly to their national peers (Tables 12 and 13). Both groups stated that they would include "Is available for free," "has the ability to remix and repurpose," and "is easy to combine with other course materials" most frequently. Both groups were also were unsure about the other given OER characteristics at about the same rates. Responses indicating uncertainty about the most common descriptor "is available for free" was examined in relation to OER awareness in the second quantitative research question of this study.

Resource Selection

The local and national groups both reported that teaching faculty, either as individuals or in groups/committees, have a role in the selection of course resources (Table 16). Both groups reported that the individual faculty member has the primary role in the selection of materials used in the courses that they teach (Tables 17).

On the fifteen factors that contribute to the selection of course resources, the local group differed significantly with their national peers on two key points. Both groups considered "trusted quality" and "subject coverage" in their top three criteria when choosing course resources. The local group chose "currency of subject material" (46.3%) as being the third most

important factor whereas this factor was chosen as important by just 3.3% of their national peers. On the selection factor of cost, the local faculty also differed widely from the national group. The national faculty group chose "cost" as one of the least important selection factors (2.7%) whereas the faculty at the research site considered cost as the fourth most important factor (27.5%) (Fig. 5).

OER Use

This section of the survey asked respondents to describe their use of OER materials. The focus of these survey questions centered on OER use as primary or secondary course materials and the types of OER material the respondents used most frequently. Again, the local and national groups responded similarly. Around 20% of each group reported the regular or occasional use of OER as primary course material, and about one-third stated they used OER as secondary course material. Allen and Seaman stated that they believed that faculty erroneously reported their use of OER as course material because OER awareness rates were low in relation to the reported use of OER. This phenomenon appeared to be true of the local sample as well. About 20% of respondents who reported they were unaware of OER also reported that they used OER as primary or secondary course materials (Table 18).

Respondents were also asked to report the types of OER materials that they use most frequently. The local and national groups reported that they use OER images, videos, and video lectures most frequently.

OER Assessment

This section of the survey featured two questions that asked respondents to rate the quality of open educational resources and traditional course resources. The researcher noted serious concerns about both Allen and Seaman's reporting and data set and the wording of the second question in this section of the survey.

There were discrepancies in two aspects of Allen and Seaman's report and national data that prohibited the comparison of groups on all response choices for the first question in this section. The question asked respondents to rate the quality of OER and traditional materials on twelve dimensions using the following response choices: OER Superior, About the Same, Traditional Superior, No opinion/Don't know.

First, Allen and Seaman did not report the response rates for the fourth response choice "No opinion/Don't know" in their data set or in the published report. This response choice was important to the assessment of the local faculty, and a comparison to the national group on this response choice could not be made. Second, Allen and Seaman also changed the titles of the OER "dimensions" in their final report from those that were used in the survey, so comparisons of the groups could also not be reliably made on this question.

The following comparisons could be made between the local and national groups on some dimensions. Both groups agreed that OER was superior to traditional materials on the dimension of cost. The local faculty stated that OER was superior on the dimension "adaptable/editable," which was one of the response choices that was not included in Allen and Seaman's data set. Local faculty rated "includes all the material I need" as the only area that

traditional materials were rated superior to OER (Table 20). On the remaining ten dimensions, the local faculty group responded that they had no opinion / did not know.

The second question asked faculty to rate the perceived quality of OER and the quality of materials from traditional publishers, which the researcher also noted as problematic. The first question in this section asked faculty to rate OER vs. traditional *resources*, which is a quite general in scope. In the second question, however, Allen and Seaman changed this language to "materials by traditional *publishers*." Although the responses of the local and national groups could be made on this question, the researcher noted that the obvious bias in the wording of this question was concerning.

The local and national faculty responded similarly to this question. Half of both groups of respondents could not rate the quality of OER and about one-third of each group could not rate the quality of traditionally published materials. The local faculty group considered traditionally publisher materials in a slightly harsher light than their national peers: about 3% of the local group considered these materials as poor (Fig. 8).

Barriers to OER

This section of the survey was offered to those respondents who stated they had some awareness of OER. Respondents were asked to rank the top barriers to their use of OER. The lack of a comprehensive catalog of OER resources, difficulty in finding OER materials, lack of resources for their subjects, and uncertainty about being able to use or change materials were the top four barriers for both the local and national groups. As Allen and Seaman noted about the national group, after these first four barriers, the lack of concern about barriers drops considerably (Fig. 9).

Allen and Seaman anticipated discovering OER as a major barrier to usage and included specific questions about this barrier in their survey. Again, both groups answered questions about discovering both OER and traditional materials quite similarly. Both groups found the discoverability of OER to be difficult while discovering traditional materials was mostly considered easy (Fig. 10).

Future Use of OER

Faculty who responded that they were not current users of OER were asked to predict their OER use in the next three years. Both the national and local groups responded similarly. The majority of non-users stated that they would or might consider using OER in the next three years. About 20% both groups stated that they had no opinion or did not know if they would consider OER in the next three years, and a small percentage responded that they had no interest in OER (Fig. 11).

Quantitative Research Question 2

In order to more deeply examine the local respondents' awareness of OER, the second research question guiding the quantitative phase of this study was:

Does an association exist between the respondents' stated awareness of OER and their stated awareness of common features and components of open educational resources?

In order to address this research question, three chi-square tests of independence were used to more closely examine associations between the local respondents' awareness of OER and aspects of OER knowledge, including the creative commons, the descriptive component that OER is free, and respondents' uncertainty about the quality of OER. In order to run these

analyses, the local data was filtered into nominal awareness and non-awareness groupings and the chi-square test of independence was applied.

Allen and Seaman speculated in their report that there was a positive association between the respondents' knowledge of OER and their awareness of Creative Commons licensing. To test Allen and Seaman's assumption, the chi-square test of independence was performed on the local data to compare the OER and Creative Commons awareness responses, The null hypothesis: (H_0) "Awareness of open educational resources and awareness of the creative commons are independent" was tested (Table 11). A statistically significant association was found between these two variables with a moderate to large effect size.

Respondents were asked to select components that they would use to describe OER to a colleague and were offered seven common descriptors. They were asked to choose "would include," "would not include," and "may or may not include." The descriptor OER is "available for free" was the local (and national) respondents' most frequent choice (Tables 12 and 13). The respondents' selection of "may or may not include" indicated uncertainty about the components of OER. To confirm the local respondents' stated lack of awareness of OER, a chi-square test of independence was performed (Table 14). The null hypothesis for the chi-square test was: H_0: "Unawareness of OER and uncertainty about OER being freely available are independent." A statistically significant association was found between these two variables with a small to moderate effect size.

The local populations' stated unawareness of OER was further confirmed by performing a chi-square test of independence on their stated lack of knowledge about the quality of OER (Table 21). The null hypothesis for the chi-square test was: H_0: "Unawareness

of OER and lack of knowledge about OER quality are independent." A statistically significant association was found between these two variables with a small to moderate effect size.

The examination of the survey data revealed that like their national peers, the local faculty group was largely unaware of OER. The second research question was used to confirm this lack of awareness and to identify areas of particular concern: knowledge of the common licensing used in OER, components and features of OER, and to gauge the respondents' ability to evaluate open resources.

CHAPTER 5

PHASE II: QUALITATIVE ANALYSIS

Methodology

Connecting the Quantitative and Qualitative Data

The qualitative phase of this study focused on obtaining interpretations of survey data collected and analyzed in the first phase of the study, the quantitative phase. Development of the case was the main integration point between the sequential phases of this mixed methods study (Yin, 2009). In this sequential explanatory mixed methods design, the quantitative and qualitative data were connected in the intermediate stage of the research through the a.) Definition of boundaries for the case study, b.) Identification of the interview participants, and c.) Development of the interview protocol. Mixing of the quantitative data and qualitative data also occurred during the case development and analysis: the results of the quantitative phase were used to develop the descriptive conditions of the case study and to formulate the a priori codes for the qualitative analysis. In addition, qualitative data gathered from the survey was analyzed as part of the case study. Integration of both phases occurred in the interpretation of the study as a whole.

Qualitative Research Design

A single case study design was used in the qualitative phase of this study. The goal of this qualitative single case study was to explain the results of the quantitative phase of the study and to identify institutional supports that may aid in the adoption of OER at the research site.

As detailed in Chapter Three, a case study is a version of an ethnographic-study, designed to acquire rich, detailed, contextual data from within a bounded social system (Merriam & Tisdell, 2015; Stake, 1995; Yin, 2009). Utilizing multiple complementary data elements in a single case study design resulted in a well-grounded sense of local reality addressing the research questions of this study (Miles, Huberman, & Saldana, 2016; Yin, 2009). As noted by Creswell (2013) and Yin (2009) triangulation of different data elements in case study analysis provide richness and depth of the explanation of the case.

Four distinct sets of data were used to perform the within-case analysis: the qualitative data derived from the two open-ended questions from the survey, and the data from the two Innovator interviews. The responses to the open-ended survey questions were used to address the first research question and to further explain the quantitative results from the first phase of the study. The interview participants, faculty who are experienced adopters of OER, provided unique insights into faculty attitudes, knowledge, and use of open educational resources. The interview participants also provided suggestions for necessary institutional supports for early adopters of OER that addressed the second research question.

Case Study

Descriptive case studies, according to Yin (2000) "capture the circumstances and conditions of an everyday situation" (p. 52). A single case descriptive design was employed in the second phase of this study because this case examined "only the global nature" of the phenomenon within the bounded context (Yin, 2009, p. 55). The faculty members who participated in the survey (n = 354) were the context for the case study. The holistic nature of this inquiry required that the qualitative data from the survey and the interview data be analyzed separately then as a whole in order to describe the case. The iterative process of the case analysis addressed both qualitative research questions.

The case was situated within the boundaries of those persons who responded to the survey. As described in several sections of this report, the survey participants were full and part time faculty members at a community college (n = 354). Two faculty members who participated in the survey were selected for in-depth interviews because they fitted a predetermined profile as Innovators in open educational resources at the research site.

Interview Participant Selection

To build a sample of potential interviewees, survey participants were asked to indicate their interest in being interviewed. The survey responses were used to identify OER "innovators" at the research site, as defined by the diffusion of innovation theory description of the adopter categories (Rogers, 2003). Rogers (2003) described Innovators as having an important role in the diffusion process by being first to launch the new idea into to the system

and influencing wider adoption of the innovation. The following criterion was used to identify Innovators in this case. The respondents

- Agreed to be interviewed
- Stated they were primary decision makers in the selection of materials in their courses
- Stated they used OER as primary course material
- Stated they were very aware or aware of OER
- Correctly provided specific OER in the OER Examples open-ended survey question.

Of the 143 survey participants who stated they would be willing to participate in an interview, two (2) subjects met all of the above criteria.

Interview Protocol Development

As is typical in sequential explanatory mixed methods research designs the interview protocol was developed specifically explain the results of the first quantitative phase of the study. In addition, the interviewees were asked reflect on their OER adoption process and to suggest institutional supports that might widen adoption of OER at the research site. The focus of the interviews was grounded in both the phase one statistical results and topics gleaned from the initial analysis of the text comments provided by survey participants. The interview questions were developed after the quantitative analysis and also included some questions that were tailored for each individual based on their responses to the survey questions.

As suggested by Merriam and Tisdell (2015), the interview questions were parsimonious in that they focused solely on OER experience and behavior, opinions, and

included “ideal position” questions (p.120-121). The interviewees were questioned about their experiences with OER to learn more about; a.) Their beliefs and attitudes about OER, b.) Their personal process of adoption of OER, c.) How their experiences with OER may inform other potential adopters, and d.) Their suggestions on how the institution may assist other faculty in the exploration of OER.

The interviews included closed-ended demographic questions to use for confirmation against the respondents’ answers to questions in the survey. The interview protocol consisted of 14 questions with sub-questions as needed in the semi-structured interview format. The interview questions are located in Appendix G.

Descriptive Conditions

Based on the phase one quantitative analysis, the most salient descriptive conditions of the case were defined prior to the qualitative phase and were loosely organized around the topics in Allen and Seaman’s (2014) survey. The descriptive conditions of the case are listed in Table 24.

Qualitative Data Collection and Analysis

Data Collection Procedures

As described previously, the qualitative data gathered from the open-ended survey questions were crucial to explaining the statistical results of the survey. Survey respondents answered these questions voluntarily. Not all participants answered the open-ended questions. The questions were:

Table 24

Case Study Descriptive Conditions

Topics in Allen & Seaman's (2014) survey & report	Descriptive conditions
OER awareness	More than half of respondents were unaware of OER.
	Most respondents were unaware of common OER licensing types and OER components/features.
	Respondents may have overstated their awareness of OER
Resource selection: gatekeepers	The majority of respondents report control over the resources used in their courses.
	Respondents differed from their national peers on selection factors: the local group considered "currency of subject materials" and "cost" significantly more important than the national group.
OER use	Respondents stated they use OER as primary and secondary course material but may have been misidentifying OER resources.
Course resources	Over half of respondents were unable to comprehensively assess OER quality due to lack of OER awareness.
	One-third of respondents were unable to comprehensively assess the quality of traditional materials.
Barriers to OER	Lack of awareness of OER.
	Difficulty locating appropriate OER.
	Institutional support for OER initiatives could alleviate barriers.

- Please provide some examples of Open Educational Resources that you are aware of. (List OER.)
- Thank you [for taking the survey]. Your comments are welcome:

The data collection conducted during the second phase of the study consisted of semi-structured in-depth interviews. The two faculty members that met the Innovator criteria were invited via email to participate in the interview phase of the study. Upon consent, each interviewee was provided with the interview questions, a copy of their personal survey response, and the informed consent form prior to the interview. Each interview was one hour in length. The interviewees provided an example of the open textbook that they used as primary course material. The discussion of these artifacts assisted in providing a full characterization of the Innovators' experiences with OER. The interviews were transcribed verbatim and were checked for accuracy against the recordings.

Verification Procedures

As recommended by Creswell (2013), Creswell and Plano Clark (2011), and Merriam and Tisdell (2015), establishing the qualitative equivalent of reliability and validity has different requirements than quantitative research. The researcher seeks to show trustworthiness (Lincoln & Guba, 1985) through a verification process rather than through traditional quantitative methods. Creswell (2013) recommends that at least two verification strategies be used in a study (p. 253). Establishing credibility of the data analysis was conducted in this study using three methods:

1. Data Triangulation. Multiple sources of data were used to corroborate the qualitative findings and to draw conclusions based on more than one single source of evidence

(Patton, 2013). Convergence of findings between the survey results, the qualitative data from the survey, the interview data, and artifacts from the interviewees strengthened the construct validity of the case study (Yin, 2009).

2. Rich, thick description. A detailed narrative was created to communicate the qualitative findings to thoroughly explain the case, addressing the research questions (Creswell, 2013; Yin, 2009).
3. Auditing. Throughout the course of this study, the researcher's academic advisor conducted constant audits of the research procedures and data analysis (Creswell, 2013).

Qualitative Analysis Procedures

Since the second phase of the study was a single case study design, the analysis was performed at one level: within-case. The protocol for the analysis was exploratory in nature, which, in a narrative format, was guided by the descriptive conditions about the case and the complementary themes identified in the qualitative analysis (Yin, 2009). The goal of the case description was not only to explore the major aspects of the case, but to also generate ideas and theoretical concepts for further study (Eisenhardt & Graebner, 2007).

The steps in the qualitative analysis included:

1. Identification of appropriate data coding protocols (Saldana, 2016).
2. Development of a priori codes that specifically addressed the hypotheses and areas of interest about the case (Saldana, 2016).
3. Initial exploration of qualitative data by reading through the data and writing memos, guided by the descriptive conditions of the case in Table 24 (Yin, 2009).

4. Performing first- and second-cycle coding of the data by segmenting and labeling the textual data (Creswell, 2013; Saldana, 2016).
5. Development major themes of the case by aggregating/collapsing similar codes (Creswell, 2013; Miles, Huberman, & Saldana, 2014).
6. Analysis of themes to build the narrative case explanation (Stake, 1995; Yin, 2009).

The qualitative data was processed and coded using the qualitative software analysis package, NVIVO (for Mac v.11.4.0).

Data Coding

Qualitative research can develop increasingly complex levels of abstraction, so it was important to be both flexible in the development of salient themes but disciplined enough to consistently and directly address the research questions (Creswell, 2013). Codes that directly addressed the research questions of this study were developed prior to the qualitative data analysis and were based on the descriptive conditions about the case (Table 24).

The analysis of the qualitative data was conducted using two distinct coding techniques in order to identify the most salient themes of the case. The OER Examples question was analyzed using the hypothesis coding method (Bernard, 2006; Saldana, 2016). The qualitative data obtained from the Comments section of the survey and from the Innovator interviews were coded and analyzed using the structural coding technique (Saldana, 2016).

Coding of OER Examples Survey Data. Hypothesis coding is an exploratory coding technique in which the application of pre-determined codes "specifically assesses a researcher-generated hypothesis" (Saldana, 2016, p. 170). The OER Examples survey question asked respondents to list specific examples of OER with which they were familiar. The researcher

hypothesized that the OER Examples data would assist in substantiating the findings of the statistical examination of the OER Awareness questions in the quantitative phase of the study. Miles, Huberman, & Saldana, (2014) noted that hypothesis coding is best applied in circumstances in which frequency counts of qualitative data would assist in proving a hypothesis (p. 283). Table 25 details the hypothesis codes for this question, the code definitions, and examples of participant responses.

Table 25

Coding Scheme for Analysis of OER Examples Question

Hypothesis code	Definition	Example response
OER	Resource listed is OER	"Open stax"
Not OER	Resource listed is not OER	"Library databases" "Wordpress"
Mixed OER	Resource listed could contain both OER and non-OER materials	"Merlot"
Undefined	Resource listed was not defined.	"Textbooks"
Uncertain	Response indicated that the respondent did not know and/or was unaware of specific OER.	"I'm not sure what fits into this category."

Coding of Open-Ended Survey Comments and Interview Data. The structural coding method (also known as utilitarian coding) is a primary coding technique that utilizes coding categories that are framed by the research questions of the study. Structural codes are

particularly useful in content analysis of interviews and are also appropriate for open-ended survey responses (Saldana, 2016, p. 98). Structural coding at the basic or first level, according to Saldana (2016), is used as categorization technique to organize data for analysis (p. 100). The categories of coded data can be aggregated for more detailed second-cycle coding and analysis. Organized around the main topic areas of the survey, the structural codes for this study were developed a priori to address the qualitative research questions.

Since this data corpus was dense with commentary centered on broad OER topic areas, focusing the data coding and the analysis on explaining the survey results addressed the first research question. The second research question was addressed primarily through the analysis of the data from the Innovator interviews, though some of the survey comments also contributed to answering the second research question. The a priori structural codes and the second-cycle analysis codes for each category were aggregated to develop themes of the analysis, providing the basis for the narrative description of the case (Creswell, 2013).

An additional a priori code was added to capture comments from survey respondents who stated their intent or desire to learn more about OER. In diffusion theory, the Early Adopters typically follow Innovators in the diffusion process (Rogers, 2003) so it was efficient to capture this data. This category of data will be discussed in Chapter 6.

Data Description

OER Examples Survey Question

In this open-ended question, the respondents were asked to list specific examples of OER of which they were aware at the time of the survey. As stated previously, the hypothesis-

coding scheme (Table 25) was used to analyze this section of the qualitative data set and a frequency count of coded items was developed. Quantifying this data aided in explaining the OER Awareness findings in the quantitative phase of the study, discussed in Chapter 6 (Bernard, 2006; LeCompte & Schensul, 1999; Saldana, 2013).

OER Comments Survey Question

This open-ended question prompted respondents to provide comments. The respondents who provided comments (n = 62) shared their general opinions about OER and about the topics addressed in the survey. As explained earlier in this chapter, these comments were examined using the structural coding technique (Table 25). The respondents' comments were centered on their awareness of OER, perceived barriers to OER, their opinions about course resources generally, and their opinions about the support needed to explore OER. After first and second-cycle coding, five prevalent themes were identified. Additionally, eleven potential early adopters of OER were identified. The structural coding scheme, second cycle codes, and emergent themes are detailed in Table 26.

Innovator Interviews and Profiles

The interviews of the two faculty members who met the Innovator criteria were coded using the same structural coding scheme as the OER Comments question. It is important to note that the Innovators also participated in the survey so the focus of the interviews and data analysis was on their individual experiences with open resources, their adoption process, and their suggestions for how OER adoption might be supported by the institution. After the second cycle coding of the data aggregation of similar codes, and the review/discussion of the

Table 26

Survey Comments: Thematic Analysis

Structural a priori codes	Second-cycle codes	Prevalent theme
Awareness	--Aware --Unaware --Misconceptions	Faculty reported lack of awareness of OER.
Barriers to OER	--Ancillary materials --Department/committee restrictions --Difficulty locating --Program requirements --Technology --Time	Faculty reported a variety of limitations to selecting OER adoption.
Benefits of OER	--Cost --Flexibility --Reliability --Student outcomes	Respondents were aware of some benefits to using OER.
Course resources	--Ancillary materials --Free (Not OER) --Quality, general --OER negative --OER positive --Traditional negative --Traditional positive	Faculty had mixed attitudes about the quality of both OER and traditional course materials.
Early adopter		Respondents indicated serious interest in trying OER. (n = 11)
OER experiences	--Textbooks --Other OER	Few commenters reported experience with identifiable OER. (n = 2)
Support	--Department --Institutional --Library support --Promotion of OER --Training	Faculty require support from the institution to learn about and to potentially adopt OER

Interviewees' OER artifacts was performed, five prevalent themes were identified (Table 27).

The Innovators were full time tenured faculty at the research site. Both were assigned in the same broad academic division, "Social and Behavioral Sciences." Although Allen and Wiles (2016) advised that subjects should choose their own pseudonyms to confer anonymity, the researcher chose pseudonyms she considered appropriate.

Innovator One. "Michelle," a professor of Sociology, had been employed at the research site for 16 years. At the time of the interview, Michelle was beginning the second semester of using an OER textbook made available by OpenStax (Griffiths, et al, 2015) in her Introduction to Sociology course.

Innovator Two. "Steve," a professor of Psychology, had been employed at the research site for 19 years. Steve had been using OER textbooks for all of the courses he teaches for two years at the time of the interview. For his Introduction to Psychology course, Steve developed his OER textbook using material from the Noba Project (Diener Foundation, 2017). For his Research Methods in Psychology course, Steve adopted an OER text originally authored and openly licensed by Paul Price that was made available through the University of Minnesota's Open Textbook Library (2012).

Case Analysis

The analysis of the survey comments data and the Innovators' interview data resulted in five complementary themes upon which the within-case analysis was based. Four topical themes addressed the first qualitative research question and assisted in explaining the results of the survey. The final theme, institutional supports, addressed the second qualitative research

Table 27

Innovator Interviews: Thematic Analysis

Structural a priori codes	Second-cycle codes	Prevalent theme
Awareness	--First awareness --Institutional supports --Self-direct learning --Professional affiliations	Innovators reported that their path to OER awareness and adoption was through self-directed learning, professional development activities, and professional affiliations.
Barriers	--Ancillary/supplementary materials --Difficulty locating --Time --Transitioning	Innovators' main barriers were transitioning courses to new texts and the development of supplemental/ancillary materials.
Benefits of OER	--Cost --Flexibility --Student reactions	Innovators reported that the main benefits to students were cost and the flexibility of access to OER materials.
Course resources	--Ancillary materials --Free (not OER) --Quality, general --OER negative --OER positive --Traditional negative --Traditional positive	Innovators adopted OER to divest themselves and their students from the traditional textbook marketplace.
OER experience	--OER textbooks --OpenStax --Noba psychology --Research methods text --Other OER	Aggregated with course resources
Support	--Division --Department --Library --Promotion of OER --Training --Institutional --Research --Grant funding	Based on their knowledge of the institution and reflections on their own adoption processes, Innovators suggest formal supports that would increase awareness at the research site.

question. Table 28 details thematic analysis tables for the survey comments and the Innovator Interviews.

Table 28

Topics and Themes of the Within-Case Analysis

Topic	Survey comments theme	Interviews theme
OER awareness	Faculty reported lack of awareness of OER.	Innovators path to OER awareness and adoption was through self-directed learning, professional development activities, and professional affiliations.
Barriers to OER	Faculty reported a variety of perceived barriers to OER adoption.	Innovators' main barriers were transitioning courses to new texts and the development of supplemental/ancillary materials.
Benefits of OER	Respondents were aware of some benefits to using OER.	Innovators reported that the main benefits to students were cost and the flexibility of access to OER materials.
Course resources	Faculty had mixed attitudes about the quality of both OER and traditional course materials.	Innovators adopted OER to divest themselves and their students from the traditional textbook marketplace.
Support	Faculty indicated their need for support to learn about and to potentially adopt OER	Based on their knowledge of the institution and reflections on their own adoption processes, Innovators suggest formal supports that would increase awareness at the research site.

Qualitative Research Question One

How do the respondents' explain their knowledge of, attitudes about, and use of OER?

OER Awareness

As revealed by the statistical analysis of the survey data, half of the local sample stated they were unaware of OER. The analysis also revealed that those who claimed knowledge of OER could have overstated their awareness. The frequency analysis of the OER examples survey question confirmed the local sample's lack of OER awareness. Survey commenters made statements indicating their lack of knowledge about OER and several stated a desire to learn about OER. The Innovators' path to OER awareness was primarily through self-directed and serendipitous learning opportunities.

OER Examples Survey Question. The respondents who provided an answer to this question (n = 123) listed 248 discrete examples of educational resources by name or title. These individual items were coded "OER," "Not OER," or "Mixed OER." Respondents also provided 54 items that were coded "undefined." If the respondent indicated they did not have an answer to this question, these comments were coded "uncertain." Other comments provided in this open-ended question were not coded because they did not specifically address the question (e.g., "Sorry, its been a while").

As illustrated in Table 29, of the 248 examples provided by respondents, 44 were definitely OER. These respondents correctly provided names of openly licensed educational resources indicating awareness of specific open educational resources. The respondents also provided 45 examples of educational resource repositories that could contain both OER and licensed resources such as youTube, Khan Academy, Merlot, and iTunes U. These items were coded "Mixed OER." Respondents' listed 68 resources that were not OER such as the Library's subscription (licensed) databases, licensed educational websites, free-to-use but proprietary

educational software such as Popplet and Prezi, and other free web-based tools such as Wordpress, Tumblr, and Google Drive.

Table 29

OER Examples Coded Item Count

Code	Number of coded items
OER	44
Not OER	68
Mixed OER	45
Undefined	54
Uncertain	37
Total number of coded items	248

As hypothesized by the researcher, the results of this analysis substantiated the findings of the quantitative analysis. The quantitative analysis revealed that around half of the respondents were unaware of OER or had overstated their awareness of OER. General lack of OER awareness was confirmed by the examples the respondents provided based on the frequency counts of the items coded Not OER, Undefined, and Uncertain (Miles, Huberman, & Saldana, 2014, p. 283).

Survey Comments: Faculty Reported Lack of Awareness of OER. The respondents reported that they were unaware of or were uncertain about OER but were open to acquiring

more information, while others revealed misconceptions about open educational resources. Unaware faculty provided statements such as "I am not familiar with open resources" and "I feel so out of the loop on OER." Other faculty indicated uncertainty about OER as a distinct resource format. One faculty member stated, "I'm not sure that I understand what OER is as compared to the scores of things available for free online," while another commented, "I guess I am using [open] resources…but did not know there is a formal name or philosophy behind their use." Many statements indicating lack of awareness also implied that they would also be open to learning more. For instance, one commenter stated, "OER sounds like a great idea but I don't know much about it" and another faculty member stated, "I should be more aware of these resource options than I am. Thanks for spurring me to do some research…."

Several comments indicated that the respondent had misconceptions about open educational resources or had conflated assessment criteria for free Internet resources with those used to evaluate course resources. For instance, one commenter related concerns that OER could be used to "create various types of propaganda or one-sided opinions." Another respondent expressed concern that anyone can change OER materials, indicating lack of understanding of how individual OER are licensed, and are modified and adopted by a faculty member or department. Another faculty member stated an understandable concern about the quality of OER, because he believed that "OER is not always peer reviewed" but granted that all course resources should be "thoroughly vetted."

Two respondents gave negative comments about OER that seem to confuse OER with freely available web resources. One instructor reported that they tried to use OER as their primary course material but "was not entirely satisfied." This faculty member "found that using the OER textbook over a published textbook was like using an unpublished Internet

article over a published article. I think the role of an editor is crucial, especially in the area of language learning." The other faculty member who noted a negative comment about OER had a similar concern about the veracity of information. This faculty member stated, " I have no guarantee of the authority and accuracy of the texts. If they are written by a collective group of people that I don't know or trust, how do I know they are factually correct?" These faculty members, like many others, may be referring to materials that are not OER, since openly licensed materials are not usually published completely anonymously, and can be updated and corrected, if needed, by the instructors that adopt them.

Many respondents offered comments on freely available resources that are not OER. One faculty member commented on improvement in student learning when students take advantage of a freely available but copyright-restricted resource, Khan Academy. The faculty member stated, "Students who use Khan Academy for microbiology fair better in the course than those who do not utilize this resource." Another faculty wrote, "I can't imagine teaching my writing courses without being able to reference online videos, images, infographics, and free programs." A respondent also noted that she often refers her students to Internet resources and uses these opportunities to teach students "to check the verifiability of information." Others stated that they make use of licensed resources available through the college library, mentioning "library (article) databases" and "Lynda.com" as viable free resources that they take advantage of in their teaching.

Interviews: Innovators Reported That Their Path to OER Awareness was Through Self-Directed Learning, Professional Development Activities, and Professional Affiliations. Michelle is a professor of Sociology and, at the time of this research, had used OpenStax Introduction to Sociology (2015) as the required textbook in her introductory course for two

semesters. Michelle stated that she first became aware of OER by keeping current on teaching innovations in her field, by taking advantage of professional development activities on campus, and through being a student in multiple Massively Open Online Courses (MOOCs). Michelle learned about OER by being a student in courses that used OER as primary and secondary course material. She stated, "I've taken about a million MOOCs. And, of course, because MOOCs are designed to be free…they make very big use of open materials." Michelle speculated that since MOOC developers were using OER texts with potentially thousands of students in a single course, "maybe we should be using [OER] as well."

The college librarians began sharing information with faculty about open resources in 2013. In 2014, the librarians organized a faculty in-service day with activities focused around open resources. This event was instrumental to Michelle's learning and adoption process. The Open Access Week 2014 event featured a guest speaker from the Community College Consortium Open Educational Resources (CCCOER) and an afternoon workshop on finding OER. Michelle stated, "This [event] is really when I started thinking seriously about" adopting OER.

At the time of this research, Steve had used the *Noba Psychology* as primary course material for two years. The developers of the Noba project credit Steve as one of their earliest adopters. He also has adopted an openly licensed text for his research methods in Psychology courses. Steve reported that his growing awareness of OER was a series of coincidental occurrences. He stated that right around the time he was considering changing the textbooks for his courses, he began receiving informational emails from the *Noba Project* and information about open access from the college library. Steve stated, "It was just a combination of those

things happening around the same time [that] kind of got the wheels turning in my head as something that I might want to consider."

Barriers to OER

The statistical analysis revealed and survey commenters confirmed that the most common perceived barriers to OER adoption were difficulty in finding appropriate materials and lack of sufficient awareness of OER to determine its characteristics and quality. Survey commenters also reported that control over course resource selection is a barrier for some faculty. Faculty also reported concerns about using electronic materials with students. Barriers for both survey commenters and Innovators included development of ancillary materials and the time required to implement new course resources.

Survey Comments: Faculty Reported a Variety of Perceived Barriers to OER Adoption. Respondents were keenly aware of the challenges surrounding learning about, locating, and potentially adopting OER. The most common limitations cited were departmental/program barriers, difficulty in locating open materials, using online/electronic materials with students, and the amount of time that adopting OER would require. A few faculty stated concerns about open textbooks not having appropriate or enough ancillary materials available. Another significant barrier was control over resource selection.

An individual faculty member or a faculty committee often selects textbooks for all sections of a course, or for all courses in a particular certificate or degree program. The survey results revealed that the 65% of respondents reported that they had individual control over the resources they use in their teaching, the minority (those who do not have control over selection) commented on this as a barrier to OER. Some respondents noted that they would like to try

OER "but some of the faculty do not support it" and that OER "is not used, discussed, or encouraged" by those in charge of text selection. Others were uncertain if the "institution would permit deviation from the department-approved text" or if they would be "allowed" to try a different text. An adjunct faculty member noted that she/he is personally limited in their teaching because they "do not get a choice in regards [sic] to the textbook." One respondent stated that she has a required text in her course, which, "as an adjunct, I have been given no say in choosing." Another adjunct faculty member who teaches at more than one college expressed frustration and concern, though it was unclear if she was speaking to her experience at the research site:

> At one college, I am not allowed to bypass selecting a formal/traditional textbook for my course. At the other college, I can choose to use OER's and skip selecting a textbook. This leads me to double my lesson planning and complicate what I am doing for similar courses at different schools. The college that does not allow me to skip assigning a print textbook does allow its full time faculty to use only OER's in the classes. This is unfair to me because it blocks me from being the best instructor I can be when I know most faculty and administrators would agree that my class would be improved if I had more control over the textbook and content.

It is clear from the respondents' comments that the minority, those who expressed lack of control over selection of course resources, were either adjunct faculty or full time faculty with little influence over curriculum.

Additionally, some programs could be prohibited from using OER due to accreditation concerns, as Allen and Seaman (2014) mentioned in their report. One respondent commented on this issue stating, "I teach in a Health Sciences program where OER's are quite limited and do not meet the requirements of a pre-licensure program."

As revealed in the survey analysis, locating OER was a major difficulty for the respondents. Four individuals commented on this issue in the open-ended comments of the

survey. One respondent reported being very interested in using OER's in high-intermediate English Language Learning courses but had not been able to find suitable materials. Another respondent noted that even traditional resources in their subject area were sparse and outdated and the few bits of OER this person was able to find were not suitable replacements. Although open to OER and "hopeful for the future," another faculty member reported that they have not been successful in finding materials for their courses. The research site is a large community college with a vast array of career and transfer curricula. One commenter observed that more OER materials seem to be more readily available for traditional higher education curriculum, stating it seems "geared to research-based / hard sciences" programs.

Students' access to and use of technology was a prevalent perceived barrier reported in the survey comments. Respondents focused this concern on the use of OER available online as primary course material (textbooks) and the use of online materials as supplemental learning tools. Though all OER are available online, many texts can be printed and used like a traditional paper text. However, this perceived barrier is a serious one for instructors. A respondent noted that when "extensive learning opportunities" are made available online, students "see it as a barrier." An instructor of English echoed this concern stating, "e-versions of texts become difficult to navigate when they need to analyze…and retrieve textual evidence like quotes." Other faculty had concerns about students' access to technology. One instructor noted that as he has shifted his courses to utilizing more electronic content, the "digital divide" has become more apparent. This instructor has found that "not all students have access to a computer or to Wi-Fi on a consistent basis." Another instructor noted the same issue, stating that electronic versions of book material require "a certain level of technology…that the students don't have. So they are trying to read an entire novel for class on their tiny phone."

Instructors also see electronic materials as barriers to student learning. One respondent surmised, "online materials give students the impression that they can read it on their phone; we know students retain less this way." The instructors' desire to provide access to course materials in ways that best suit students' learning needs is an understandable concern.

A less altruistic yet very practical barrier that respondents addressed in the comments was the lack of availability of ancillary resources with OER textbooks. Texts by major publishers very often provide support materials such as test banks, pre-packaged lecture slides, assignments, supplemental tools for students, and "plug and play" resources for uploading into the institution's course management system. Many OER textbooks do not have adequate ancillary tools so this barrier, though surmountable, is a credible concern.

Faculty also noted that the time needed to investigate and potentially adopt OER in their courses was a barrier. One faculty member stated that she "needs time to review the materials" but because her "5/5 load (5 courses per semester) is so frantic, its hard for me to look for new readings that work for my classes." The research site has a large diversity of programs, some of which are taught and managed by an individual full-time faculty member. One such "single faculty" noted that "we are all spread so thin…there is no time to investigate new options for our classes then share them with part-time faculty." Another faculty member noted, "OER's take a lot of time to develop" and stated concerns that this work would have to be done on personal time, which is neither practical nor fair to the instructor.

Interviews: Innovators' Main Barriers Were Transitioning Courses to New Texts and the Development of Supplemental/Ancillary Materials. Steve did not experience significant barriers to adoption of OER beyond the work involved in transitioning of his courses to new texts. Steve stated that he had previously developed his own textbook-independent

supplemental/ancillary materials. However, Steve noted that adopters of Noba materials do have access to "instructor's resources with all of the things that the commercial publishers have…[such as] recommendations for things to do in class, power point lectures." Steve went on to say, "I'm really not using any of that stuff but they're all there. They [also] have a self-quizzing feature on their online version." Steve noted also that Noba Psychology provides a "blackboard-formatted test bank" that he had chosen not to use because the quality was not up to his standards. Steve stated that with further development, the Noba test bank could be a viable option.

Michelle experienced significant obstacles in developing appropriate ancillary materials to accompany her Sociology text, such as a bank of test questions to use in the (Blackboard) learning management system. The test bank that accompanied the OpenStax text was insufficient and there was "no tool to integrate into Blackboard." About OpenStax's ancillary resources, she stated the test bank was "small and bad. The questions [were] terrible; I wouldn't dare put that in front of students." To prepare to use the new text for the first time, Michelle purchased a software tool that she used to create a sufficient bank of questions that could be imported into Blackboard. She "spent an enormous amount of time" authoring a test bank that contained conceptual, theoretical, or applied questions that could be randomized in the LMS and would offer a variety of question formats like multiple choice, short answer, or essay. Michelle noted that the amount of time she had to spend transitioning her course to OER is "part of the reason" she has not "shifted other courses to OER."

Another obstacle that Michelle faced in her first semester was simply finding her bearings with the new text, noting the transition "was a bit bumpy." She stated that she had to offer the students additional support to be successful in their exams because "they were really

struggling" in that first semester of the OER text. Michelle allowed her students to bring handwritten notes to their examinations, stating she had gone "back to the research," and found that "people memorize better when they make their own handwritten notes." So, she changed her practice to include this activity in addition to the supplemental resources that she previously developed to help her students be successful. Michelle is a technically proficient and creative individual. Prior to adopting the OER text, she had developed a suite of original multimedia materials such as videos, graphics, and concept maps for her Introduction to Sociology course. In addition to these original resources, she also utilizes freely available web resources in her teaching. These supplemental materials are used in this course along with the OER text.

In the period between Michelle's first and second semesters of using the new book, OpenStax introduced a new tool for the Sociology text called "Concept Coach." In the second semester of using the new book, Michelle implemented this tool in addition to the handwritten exam notes and her own supplemental materials to her course. She describes the OpenStax Concept Coach tool as "an augmented textbook." When students are reading the online version of the text, they encounter "windows with multi-media popping up or have a quiz question popping up." She stated that the OpenStax Concept Coach tool is still in the "pilot stage" but has promise.

Benefits of OER

The survey results revealed that faculty at the research site considered cost an important criterion in the selection of course materials. The majority of survey respondents also judged OER as superior to traditional course materials on the dimension of cost. Around half of the survey respondents also reported that OER was superior to traditional materials in terms of

flexibility and adaptability. The concern about costs to students was reiterated in the analysis of both the survey comments and interview data. Another driver of OER adoption was the negative impact of the traditional publishing market on teaching and learning. Both Innovators and survey commenters also reported that they viewed flexibility materials as a benefit to using OER.

Survey Comments: Respondents Were Aware of Some Benefits to Using OER.

Respondents' comments about the anticipated benefits of OER focused on cost savings for students and the flexibility of OER. Several respondents mentioned cost savings for students as a major benefit. One faculty member stated that they were interested "mostly because of cost issues for my students" while another commented that when they "can reduce a student's costs without sacrificing quality," they would like to do so. Another noted that although he was unaware of open resources available, "materials that come at no cost to students" would be of interest to him. Two respondents reported that students often come to class without the required materials and are unprepared for learning. One commenter noted that some students "try to make it through" the whole semester without the materials. These respondents did not elaborate upon the success rates of these students but the impact of not having access to the course text is certainly implied.

One respondent, stating that she would like to develop a "partially flipped classroom" model for students, noted flexibility in resource options as a path to innovation. For this faculty member, the flipped classroom model would currently have to rely on traditionally published resources over which the faculty member has no control. Using proprietary resources that could change without warning would pose a risk to the faculty member in that time and energy, not to

mention the new course content, would be wasted. The faculty member stated, "I envision that if I decided to use OER, this risk would be greatly minimized."

One respondent provided commentary on the benefits of OER couched within a critique of the traditional textbook market. One faculty member stated, "The traditional textbook approach is broken in many ways. I plan to become increasingly an 'OER'er' in the hopes of bridging these gaps in access and utility." Another stated they use openly available resources for specific topics that "the publisher does a poor job of addressing."

Interviews: Innovators Reported That the Main Benefits to Students Were Cost and the Flexibility of Access to OER Materials. Both Innovators stated that the most important benefit to OER and their primary motivation for adopting OER was to relieve some of the financial pressure on students. Both were mindful of the increasing cost of higher education, including textbooks, and related their compassion for students' financial burdens and how those burdens may affect success. Steve stated, "I have always been really concerned about how much textbooks cost…I want them to pay nothing. I really do." Steve noted that he is aware that his colleagues in Psychology are also concerned about cost issues. He said,

> I look through the books that other people use in Psychology. Because we have so many sections you really can generalize a lot from that. You can see what a lot of people are doing, they're getting the loose leaf bound versions of [a text], for example, or giving students options that end up costing a fair amount less. I really do think that this is a top of mind issue, for a lot of [faculty] at our college.

Michelle also expressed concerns for students stating, "If I had my druthers, my courses would cost nothing above tuition. She commented on the impact on students' lives, stating, "The kind of students we have, a hundred bucks savings makes a big difference. It's probably your grocery bill for the week…or it's fixing your car so you can actually show up for class."

Both Innovators received positive responses about the OER texts from students. Both related that their students showed appreciation and relief when they learned that there is no cost for resources in their classes. Steve recalled a class applauding when they learned there would be no cost for the text. Michelle's students were incredulous at first. She stated, "Well, first they have to ask me two or three times if I'm really sure that it's free. Because they can't believe it." She related that students were looking "for the catch," then realizing there was none,

> You can tell it's a major relief. To know they won't have to pay…when they go to the first day of classes--3 or 4 classes--by the time they get to me, they probably have figured out in their minds that they have an $800 bill already [just] to get going.

Michelle informally surveys her students at the end of each semester to capture their impressions and feedback about the course. In the first term of using the OER book, Michelle's students reported "in terms of the stuff they liked about the course, the free text was one of the things they mentioned." Although the first course was "bumpy" for both Michelle and her students, the positive aspects of the course for students included the textbook. Steve reported that he had not received feedback specifically about the textbook, which he viewed as somewhat positive. As any instructor in higher education knows, students do not hold back their opinions about the course text in their final course evaluations.

As to student outcomes and/or retention, neither Innovator has had the opportunity to conduct research on the impact of the OER texts on their students' success though Steve expressed a strong interest in conducting research at a later time. Anecdotally, though, both Innovators felt that OER had a positive effect on learning specifically because they knew each of their students had access to the textbook on the first day of class. Steve spoke generally

about this: “I think they’re learning, at least as well [and] in many cases better, because we know that a whole lot of students, when the book is $300.00, [they] don’t buy it. So I’m really confident that every single one of my students has the book.” Michelle had the same impression about the positive benefit of students having their textbook on the first day of class.

Both Innovators liked the flexibility of access that the OER text afforded. The Noba Psychology project offers users “around 100” separate modules addressing Psychology topic areas from which an instructor crafts their own custom text. Steve used 42 Noba modules for his introductory course and had customized his version of the book so those modules were in the order in which he wanted to present the information to students. Users of both the Noba Project and the OpenStax texts have options to customize the text then are provided with a unique URL to their version of the book; students access a text that is specifically designed for their course. Steve described the customization process: “Once you’ve mixed and matched the way you want, you click ‘publish this book’…then there’s a link to generate a [custom] .pdf for anyone who wants to do that.” Or students can choose to read the book online or to print certain pages or sections. Steve’s Noba textbook was also available printed and bound for $20.00, including shipping.

Michelle noted that some of her students came to class with printed sections of the book and a few had purchased a hard copy because the print version was so affordable. Her students obviously had the option for accessing the OpenStax book for free and to print from the web but students could also opt to pay whatever they could afford for the printed version. OpenStax utilizes a “slider” system for payment for the print version of the book, “So, [the student] can slide…to five bucks, ten bucks, twenty bucks.” Students could also purchase the hard cover

version of the OpenStax Introduction to Sociology text at Amazon.com for approximately $20.00.

Course Resources

Around half of the survey respondents reported that they could not assess the quality of OER and one-third reported they could not judge the quality of the materials from traditional publishers. Only 17% considered materials from traditional publishers as excellent. When comparing OER and traditional materials, survey respondents found traditional materials superior on one dimension: "includes all the materials I need." Survey commenters shared somewhat negative opinions about the traditional textbook market, which helped explain the survey results. Both Innovators were motivated to adopt OER because of concerns about what they perceived as the negative impact of the traditional textbook marketplace on their teaching and professional practice.

Survey Comments: Faculty Had Mixed Attitudes about the Quality of Both OER and Traditional Content. Several respondents provided commentary on the perceived quality of OER and traditional resources. Some commenters voiced concern about the traditional textbook market while others expressed reservations about utilizing OER as a viable alternative. Since few respondents had experience with OER, they spoke primarily to their experiences with traditional textbooks and with freely available Internet resources.

In reference to traditionally published materials, just one faculty member expressed a positive opinion, offering this glowing review:

> The books we use in Math have so many resources for us to use it is unbelievable. We have guided notes, worksheets, testing bank, power points, online homework system, videos, and there is NO NEED to look for any more resources. We can actually use

> resources from any other textbook that McGraw[-Hill] has, so no need to look elsewhere.

As stated earlier, textbook ancillaries are important to many instructors. Some instructors consider the lack of ancillary tools as a barrier to OER adoption. Not all users of these publisher-provided tools are entirely satisfied, however. One instructor stated,

> I'm not thrilled with the videos, quizzes, etc. that come with any of the textbooks I use. The online question banks are too small and limited to the same questions over and over, and students memorize answers to specific questions rather than learning concepts.

Many commenters offered negative opinions of the traditional textbook market. An adjunct faculty member expressed frustration about the quality of the text required in her department:

> In most courses, I have to require the purchase of a thick, expensive textbook…. Most of what I've seen of these materials [is] outdated, unrealistic, limited, and not much fun (Try as they might!). Thick textbooks -- even as eBooks -- are an ineffective form, especially for recent and upcoming generations. They fail to engage, and, overall, students end up having wasted their money.

Others commented that the traditional textbook model is "broken," that traditional texts are "out of date by the time [they are] printed," and do a "poor job" of addressing the course content.

Two respondents expressed wariness of the traditional textbook market and outright mistrust in publishers and, in one case, even their colleagues. One faculty member stated that she is pressured to "make my students pay for subscriptions to additional online course materials created by large textbook publishing companies." The other respondent boldly stated that he was "stymied from using open resources by a textbook committee that clearly prefers—

and I believe directly benefits from—published materials." Although this accusation is likely unwarranted since committee members cannot directly benefit monetarily or otherwise from the selection of a textbook, this comment does reveal that alienation and resentment can be caused when some faculty, particularly adjuncts, are not included in the decision-making process when a text is selected for use by an entire department.

One faculty member would like to throw away the whole idea of course texts, offering this philosophical viewpoint: "Textbooks, OER or traditional, are the enemy. Prepackaged models of 'knowledge' train students to absorb and not think. They should be banned from college." Provided they are in control of the resources used in their own courses, instructors could forego the textbook requirement. But excluding the textbook from instruction altogether is not a viable path for the majority of instructors in higher education.

Interviews: Innovators Adopted OER to Divest Themselves and Their Students From the Traditional Textbook Marketplace. Both Innovators viewed the traditional textbook market as having a growing negative impact on their teaching, on their students, and on their professional lives. The Innovators also expressed interest in developing ways that the ancillary teaching and study tools offered by the traditional textbook publishers could be emulated in OER form.

Steve related his impetus to adopt an OER textbook. As the author of the traditionally published text he had assigned in his courses for many years, Steve had reached a point where he either had to revise his textbook again or replace it. Steve chose to adopt OER. When asked if his missed his textbook, since he was the author and intimately acquainted with the text, Steve said,

> In some senses, yes, but in another sense, no. Because I felt a kind of a relief from it. I had felt this pressure to keep revising it. I felt guilt [about] telling my students on the first day of the semester that they had to buy it, and the price went up every year.

The cost of Steve's text had reached a high that was considerably less than many texts that are routinely assigned at the research site. Despite the relatively low cost to students, however, Steve was motivated to switch to OER and to spend time developing courses around OER rather than using his time to create a new edition of his traditional textbook that students would have to purchase.

Credibility of the creators of the OER was another important factor in Steve's adoption of OER. Of the founder of the Noba Project, Steve stated,

> I recognized the person who was behind it. He's a very famous psychologist, and so I just decided to look through [Noba], and the materials were all there. So, it was just a matter of kind of getting over that fear, making a jump to it.

The other OER text Steve uses for his research methods course was written by a scholar that Steve knew personally and whose subject authority he trusts.

Michelle was also using a high quality traditionally published text when she made the switch to OER. She stated that she "had no complaints" about the text she had been assigning and, as described earlier, had to spend a lot of time developing support materials to "make up for the things" the OER text did not have. She stated,

> I must say, the open textbook is not as good as the one I had. So this is why I started drafting my own materials…to make up for that. So there was a loss in quality in the change, from my point of view. So I'm still kind of working to compensate.

Michelle's motivation to adopt OER was cost to students and also to remove herself and her students from what she described as the "ghastly protectional racket" of the "entire proprietary publishing system."

The traditional textbook publishing system, as Michelle and others (Forman, 2005) described it, is an "ecosystem" that provides so many ancillary and support services that, once adopted, an instructor would have difficulty in removing themselves from it. Michelle talked about the proprietary publishing system at length. She characterized the "bells and whistles" that accompany some textbooks as a trap ("the Hotel California") in that once an instructor enters into the system it becomes "eventually impossible to change." Michelle continued, "Pearson does it, Cengage does it, McGraw- Hill does it. They all do it. Because they know what it does." Once locked into the publisher's systems, if an instructor wanted to change the text, it becomes "a major endeavor." Michelle stated that she could see that once she decided to let herself be "tied to the ecosystem around the text" she "couldn't leave it." Michelle stated getting out of this system and the cost burdens on students were her main motivators to adopt OER. Michelle stated she wanted the "freedom" to develop and teach her courses as she saw fit and to free her students from what she believed was an unfair marketplace.

Michelle described another trend in textbook publishing in which some publishers provide ancillary packages that do not integrate into the institutions' learning management systems. Instead, the course materials live on the publisher's website. Michelle reported, "They don't integrate with your LMS. They will give you a link to their own thing, their own product." On these websites, students will use the text, study aids, quizzes, and other additional resources. The instructor support services also reside on these publisher websites. These materials are proprietary--copyrighted and protected via passwords--and in most cases cannot

be edited or customized by the instructor. The courses then operate outside of the institution, outside of the LMS, functioning as a separate and distinct "tiny U" as Michelle characterized them. Courses that function completely outside the institutional systems, in Michelle's view, were problematic because of the lack of faculty control and institutional technical support for both students and instructors.

Steve shared a similar concern. Steve expressed a strong interest in "adaptive learning systems" which are data-driven tools that facilitate the presentation of course material based on students' prior knowledge, past course performance, and/or performance in a particular course. Adaptive learning systems are a complex new trend in education; a full description of the potential and the deficiencies of these systems are outside the scope of this study. An example of a textbook-dependent adaptive learning product that Steve shared was the McGraw-Hill Connect system (2016) that he knew some instructors at the research site were using. Steve shared that he had "long hoped that the college would be able to do something like that. That we could develop our own adaptive learning engine." If the research site chose to invest resources into developing such a system locally, Steve said, "[this] would free us from a lot of barrels we're being held over by publishers."

Michelle shared that she understood why instructors adopt textbooks with ancillary teaching and learning systems that can be quite expensive for students. She stated that these materials "work for most people," particularly for those faculty who do not have control over the selection of resources, for adjunct faculty who do not have the luxury of developing their own course materials, and for those programs for which OER is not a viable option such as those with accreditor requirements for specific resources.

Qualitative Research Question Two: Institutional Support

What type of institutional supports do experienced faculty recommend to support other educators considering OER?

The institutional support theme addresses the second research question and was the focal point of the Innovator interviews. Some survey respondents also submitted comments that were related to institutional support. These comments complimented the interviews. The analyses of both sources of data are presented here and a proposed model for institutional support of OER will be presented in Chapter Six of this study.

Survey Comments: Faculty Indicated Their Need for Support to Learn About and Potentially Adopt OER

Several respondents stated they would need support to learn about and to potentially adopt OER in their courses. This support, as characterized by the survey respondents, would likely require that OER be adopted as an institutional priority. One respondent succinctly articulated this need: "OER requires the faculty member to analyze and develop curriculum. Therefore, institutional support of OER is necessary." Another faculty member noted that she would be motivated to explore OER if the institution encouraged it, stating that since her current course materials are adequate, she has "no urgency, and my school doesn't really encourage this or support this in any way." Another stated, "There seems to be so much potential here, so I wish I knew more about them….Until/unless [the institution] gives [faculty] more time to develop and share this information, it will be hard to transition from current methods of delivery." One respondent perceived the lack of institutional support and,

apparently, departmental support as obstacles, stating, “I would like to use the open source textbook, but some faculty do not support it because of lack of resource and support services.”

Faculty members indicated interest in developing original OER materials. One respondent stated, “There is a need for more OER in my field. And I do not have the resources to develop these materials myself.” Others noted that group efforts might be required to develop materials such as “having a consortium of OER users within a discipline” and to learn about “how [OER] are being utilized in instructional design by colleagues.” One faculty member reported that her department has formed a committee to “look into creating an OER for one particular area in which we cannot find a good traditional textbook.” This faculty member identified a specific institutional support for OER in the form of a faculty semester leave. She stated,” I am hopeful that we (the committee) might work collaboratively on a leave proposal for one faculty member to do some of the heavy lifting” on investigating OER in her discipline.

Respondents also mentioned general support like training and guidance and identified more specific types of support such as providing faculty with dedicated time to work on OER. Some commenters noted that they would “need someone to walk [them] thorough how to find and use” OER, that they require “time and guidance” for exploration, and one respondent suggested that the institution provide “a comprehensive introduction” to OER.

Interviews: Based on Their Knowledge of the Institution and Reflections on Their Own Adoption Processes, the Innovators Suggested a Variety of Supports That Would Increase OER Awareness at the Research Site

In their interviews, both Innovators were asked to describe support that would have been useful to them when they were first getting started with OER. They were also asked to share their opinions on how the institution might support and encourage OER adoption. Both suggested that promoting and supporting OER at the discipline, departmental, and institution-wide levels would be crucial to increasing awareness, potential experimentation, and adoption. The Innovators shared ideas about interest groups and/or committees on OER would be crucial first steps. And, in order to be truly successful, the institution would need to devote resources to supporting OER initiatives.

Both Innovators made suggestions for how divisions and departments could assist faculty in learning about and potentially adopting OER. Steve and Michelle both suggested that it would be valuable for faculty who are using OER to share their experiences both formally and informally with faculty in their own divisions. Steve said that a simple place to start would be "having a presentation when we do our subdivision meetings at in-service" in inform direct colleagues about OER activities in the discipline. "We've got a couple other people [in the division] who are doing this," Steve suggested. "So we'd get up there and talk about our experiences and the challenges and be…that model for the next generation that wants to make the leap." Steve also believed that word-of-mouth could be a very powerful tool to increase awareness of OER; that "informal conversations" with colleagues in general could go

a long way to promoting awareness on campus. Michelle agreed that fostering a "collaborative culture" within her discipline around OER would be a useful first step.

Michelle suggested that an academic service department such as the college library could also offer necessary support. Michelle noted that she understood how the difficulty in identifying OER would overwhelm and deter potential adopters. She said, "I can see how people would feel overwhelmed initially" by the OER search process because there is such a large variety of websites that are promoting and attempting to catalog materials. She characterized the process for searching for materials as overwhelming because "once you go online (to search for materials) there's just so much stuff." Michelle suggested that an appropriate academic service department could spearhead development of an "initial kind of warehouse or clearinghouse" of evaluated materials on an internal college website. Michelle envisioned this clearinghouse functioning as a "first set" of quality OER materials and could include information about OER that faculty could explore. Having a college-sanctioned place to get started could reduce instructors' anxiety around changing practice. "It might be an easier sell," she said, if there were already a curated collection of resources developed by the library or another trusted college department for faculty to use as an initial source of OER.

As described previously, both Innovators found inspiration and motivation to seriously consider OER from information they received about open resources and from attendance at the in-service event on open resources sponsored by the college library. Both Innovators interpreted this dedicated time on a faculty in-service day as a signal that the institution was beginning to formally consider OER. But, as Michelle rightfully noted, there was no follow-up to this event or formal support offered to attendees after the event. She said,

> that [in-service] day was over and we all went back to our regular things…So, out of all those people who had kind of some interest that day, how many of them actually ended up pursuing it more in depth and were thinking seriously about making changes? How many people just went back to what they were doing, thinking "this is nice but I don't have time"?

This critique speaks to the need for providing faculty with both consistent training and a dedicated source of support.

At the institution-level, both Innovators suggested that groups of people or formal committees could assist in increasing OER awareness on campus. These committees could range in scope from interest groups or communities of practice lead by current OER users to a college-wide steering committee populated by a variety of stakeholders that would develop and manage the institution's OER initiatives. Steve aptly summed up how the institution could support of faculty who are interested in OER. He stated, "the institution would best support faculty by letting faculty come together."

Both Innovators agreed that there would be real value in identifying other OER users and sharing their experiences with the faculty community. Steve stressed that he thought the OER effort should start small. "It couldn't start as a college-wide thing," Steve said. "It would have to start by identifying the people [who are using OER], sort of making them into mavens." These people would assist by "spreading the word and getting more people, so kind of a ground up sort of thing." Michelle's view of the beginning point aligned with Steve's. Michelle's idea was to form "an open access/open educational material leading group or steering group" enlisting "the people who already know" about OER as the initial committee. Michelle suggested that this group could direct the development of OER information resources for the campus and would assist in the creation of workshops, trainings, and other activities to build

awareness. Steve stated, "So you start with a committee who would be like the 'Johnny Appleseeds.' I really do see it as something like that." Both Innovators agreed that a committee of experienced OER users could provide necessary faculty leadership.

Michelle suggested that in addition to providing leadership and support, an OER steering committee could also explore the OER activities occurring at peer institutions and attempt to develop relationships with them, especially at the disciplinary-level. Michelle envisioned peer groups of community college faculty who could co-create and share OER materials:

> The other thing I think that the steering group could do is reach out. Who else in [the State] is doing it? Which of the other community colleges are doing it? And this is where, if you can get collaboration going within institutions, maybe you can get [OER initiatives] going across institutions. Because every institution might have a handful of individuals who are interested, but are kind of on their own....

Michelle continued this line of thought by referencing intra-institutional curricular agreements at the research site that facilitate students attaining 4-year degrees by completing their first 2 or 3 years of coursework, then completing their Bachelor's degree at a partner institution. Colloquially, these arrangements are called "two plus twos" or "three plus ones." Michelle said, "we could create similar sorts of institutional agreements" around OER, which would require institutional commitment at the highest levels of the college administration.

As to Institutional commitment to open resources, the Innovators agreed that reducing the risks inherent to innovation and incentivizing potential adopters would facilitate serious exploration and potential adoption. Michelle related that her adoption of OER was a "risky endeavor" because she trying something very new, all on her own.

> If I were not doing this [alone] in my corner—there would more safety in doing this as a partner initiative that is known institution-wide. So everybody knows there's a handful

> of faculty that are running a pilot, and that it may or may not work. Because you may have a price to pay for taking chances.

She added, "There's no incentive for innovation" at the research site.

Steve stated that though that "the college could just come back and say it is part of your duties to select course materials, to construct the course," the time involved with adopting OER and doing it properly would require the College giving faculty appropriate space to experiment. Steve said, "And, my heart tells me, yeah, I think that [institutional commitment] would be very, very helpful. […] There's no question that that's something I would love to see the college do." The Institutional commitment that would be most useful for the exploration of OER would be giving faculty dedicated time to explore and experiment with OER.

Both Innovators agreed that being given time (in the form of a course-release or a similar arrangement) would have helped them get started with OER and also to further develop the OER courses they have implemented. Michelle said that time would help her most at this point in her OER adoption process. She stated she would use the time to "create or find additional materials that could really complete the [development of] the course." This incentive "could be a course release or re-assigned time of some kind," Michelle said. "Yeah, that's what would be the most useful. Because the way I do it now is kind of piece-by-piece. So when I have the time, I work more on it." In reference to time, Steve said that all instructors could always use more time to innovate and to develop new curriculum and materials, especially together in groups. More specifically, Steve suggested that, for instance, "how about the college kicking in for a weekend…pay a group of faculty for a weekend to write a test bank. And then make that available to all faculty" in a discipline.

Looking ahead to an established OER program at the research site, Michelle and Steve both agreed that pursuing grant funding and conducting research on the efficacy of OER on student learning could be possible with institutional support. Michelle and Steve agreed that as faculty become more aware of OER and as individuals and/or disciplines adopt OER, empirical research on the efficacy of OER and impact on student learning would be useful to the institution and would also address the gap in published empirical OER research.

Steve stated that he would "love to see" research proposals about OER. One of Steve's faculty roles at the College is providing leadership in a department that supports research conducted at the College. He is also the faculty representative on the College's Institutional Review Board. Of the research support department, he stated that if a faculty or staff member "has an idea for something that they would like to research, we help them design a study. We can help them with the analysis once they collect some data…." The infrastructure for faculty to conduct research studies on the efficacy of OER does exist at the research site and an OER Innovator has a leading role in that effort. The availability of research support could be part of a larger program of support for OER the institution could provide to interested faculty.

In reference to funding opportunities, Michelle stated, "maybe we can apply for grants. Then there would be money. And, you know, money can be converted into time to help people" explore and adopt OER. Michelle referenced the OpenStax project, an initiative out of Rice University, which is supported by grants from funders like the Bill and Melinda Gates Foundation. Michelle stated that another longer-term goal for the research site could be the development of a community college-oriented collection of OER textbooks and supplemental materials similar to the OpenStax project. Of this goal, Michelle said,

> We could have our own kind of creative commons material. You know, just like OpenStax out of Rice University. So, we could have our own imprint, and, again, talk with a handful of people who actually do it and that we know do it well.

Those subject experts who have the desire and capability to author and/or curate OER teaching materials would be supported in that work and the research site would provide the infrastructure to openly share that material with a wider audience.

Finally, both Innovators noted that increasing OER awareness and any formal initiatives around OER must be faculty-driven. Both Innovators stated that since the faculty leads the development of curriculum and since the majority of instructors have autonomy in how their courses are taught, the Institution should not mandate the use of OER.

Case Summary

The general lack of knowledge about OER in this sample of faculty (n = 354) was confirmed by the examples of OER materials provided by the respondents and by the analysis of their survey comments. Survey commenters and the interviewees alike stated that promotion, training, and formal OER initiatives would likely increase interest in and awareness of OER. Comments from some survey respondents indicated that greater involvement of all teaching faculty, both full and part-time, in the selection of course materials would benefit students and could potentially increase adoptions of OER. Both Innovators noted that adjunct faculty should be involved in OER initiatives.

Survey commenters expressed reservations about using OER, many mentioned perceived barriers that seemed connected to their lack of knowledge about OER. These comments included concerns about the quality of the OER materials—the comments seemed to

conflate evaluative criteria of freely available web resources with those that would be used to evaluate OER. The survey respondents also expressed concerns about effectively using online materials with students. The Innovators reported that they became knowledgeable about the evaluation and use of OER through a variety of self-directed learning activities. The Innovators worked in isolation, dedicating their personal time to locating and reviewing OER materials and transitioning their courses to utilizing OER. Both reported that they did not experience overwhelming difficulties with student access and use of OER materials.

Many respondents did acknowledge that cost savings for students would be a major benefit of OER. Some commenters also acknowledged that adopting OER would offer faculty more flexibility in instruction and course development but several reported that they are not empowered or do not have time to adopt new course materials.

The Innovators reported positive student reactions to the use of OER as their primary course material. However, as reported by one of the Innovators adopting OER can be time-consuming and isolating, particularly at an institution that does not promote or support it. The Innovators adopted OER mainly to eliminate costs for students but they were also motivated to remove themselves, and their students, from the traditional textbook marketplace, which, in the Innovators' view, was becoming increasingly limiting and burdensome. Commenters also shared concerns about the traditional textbook marketplace but were not sure that OER could be a viable alternative.

Overall, the qualitative data revealed that the majority of the respondents who submitted comments were generally unaware of OER. Survey commenters mentioned that if the institution supported the exploration of OER, they would likely be more apt to seriously consider it. The qualitative analysis revealed that awareness of OER could be greatly increased

by training opportunities being made available at the research site and by the institution supporting OER initiatives at the disciplinary, departmental, and institutional levels.

The Innovators suggested that increasing awareness at the discipline level would be a useful first step in increasing awareness and potential OER adoption. At the department level, both Innovators reported that they were encouraged to adopt OER after attending an in-service day event sponsored by the college library. This departmental initiative, although flawed in that it was not sustained, did assist both Innovators in their adoption process. They suggested that academic service departments such as the library, the instructional technology department, and others could have leadership roles in increasing OER awareness among the faculty.

The Innovators also suggested that the institution could best support faculty by facilitating the work of disciplinary interest groups and cross-disciplinary/departmental committees that could provide training, develop OER information resources, and provide general support to interested faculty. The Innovators agreed that as OER becomes more widely adopted on campus and as OER initiatives become more mature, the institution could pursue grant funding, develop cross-institutional relationships, and conduct necessary empirical research on the efficacy of OER in the community college environment.

CHAPTER 6

DISCUSSION

Study Overview

The purpose of this sequential explanatory mixed methods study was to understand faculty knowledge, attitudes, and use of open educational resources and to begin to identify beneficial institutional supports for OER initiatives at the research site. In the first quantitative phase of the study, a replication of Allen and Seaman's survey, *Opening the Curriculum: Open Educational Resources in U.S. Higher Education 2014,* was administered at the research site. The local survey results (n = 354) were compared to Allen and Seaman's (2014) national sample of faculty working in public institutions of higher education. In addition, some aspects of the local respondents' knowledge of the concepts and features of OER were examined in more detail using non-parametric statistical tests. The second, qualitative phase of the study was developed using the results of the first phase: the interview participants were identified and interview protocol was created, and the descriptive conditions for a single case study were defined.

In the qualitative phase of the study, a descriptive case study was developed to explain the quantitative results in more depth, addressing the first qualitative research question. The second qualitative research question examined the potential need for institutional support for OER initiatives. Emphasis was placed on the qualitative phase of this study; the mixed

methods notation for this study was: quan → QUAL (Creswell & Plano Clark, 2011). The case study was confined to the participants of the survey and four distinct sources of qualitative data were analyzed to describe the case: the two Innovator interviews and the responses to two open-ended survey questions.

The OER Innovators in this case study were the first to exhibit "overt behavioral change" while many of the survey respondents exhibited signs of beginning "cognitive or attitudinal change" in the thoughts and ideas that they shared in their comments (Rogers, 2003, p. 269). Comparing and contrasting the Innovators' ideas and experiences with those of individuals who exhibited critical thought about OER as a possible innovation in their practice strengthened the case study and assisted in creating a proposed model for an OER initiative at the research site.

Interpretation of Qualitative and Quantitative Results

The mixed methods research question addressed in this study was:

> How can the statistical results from the quantitative strand of the study be explained using the results from the qualitative strand?

The first and second phases of this study were merged and interpreted using the following method: First, the statistical examination of the survey results was reviewed to address the quantitative research questions. The statistical results were used to develop the descriptive conditions for the case study conducted in the second phase of the study (Table 24). The results of the case study were then reiterated by topic area to assist in further explanation of the survey results. Finally, the second qualitative research question regarding institutional supports for OER was discussed and a proposed model for institutional support was developed. Citing

relevant research literature supported interpretations of the findings and the development of the OER support model.

Quantitative Phase

The first quantitative research question was:

How do the faculty at the research site compare to Allen and Seaman's (2014) national sample on their knowledge, attitudes, and use of open educational resources?

The statistical analysis revealed that the local and national samples were similar in their knowledge, attitudes, and use of OER. The only notable difference between the two groups was the criteria that the faculty reported using when choosing resources for their courses. The local faculty selected the criteria of "cost" and "currency of course materials" at a much higher rate than their national peers (Fig. 5). Of the fifteen selection criteria offered to survey respondents, the national sample considered cost least often. In contrast, the local sample ranked cost as their fourth most important selection criteria. The local sample also differed with their national peers on the importance of currency of resources. Nearly half of the local faculty chose this factor in their top five selection criteria while just 3.3% of national faculty considered currency an important selection factor. Again, on all other survey questions, the comparison of the local and national samples produced very similar results.

The second quantitative research question was:

Does an association exist between the local sample's stated awareness of OER and their stated awareness of common features and components of open educational resources?

As discussed in detail in Chapter 4, one-third of the local sample reported they were aware of OER. Only 7.5% of the local faculty indicated they were "very aware" of OER. The remainder

reported that they were somewhat aware, somewhat unaware or completely unaware of OER (Table 10). The chi-square test of independence was used to more deeply examine the association between OER awareness and three nominal variables: awareness of the Creative Commons, uncertainty about the most common characteristic of OER, and the respondents' capability to assess the quality of OER.

In their 2014 report, Allen and Seaman speculated that awareness of the Creative Commons, the most frequently used licensing apparatus for OER materials, was indicative of awareness of OER. Allen and Seaman's assumption appears valid for the local sample. A chi-square test of independence was performed on the local sample data to compare OER awareness and awareness of the Creative Commons responses. The chi-square test of independence revealed in a significant positive statistical association between these two variables, indicating that faculty who are knowledgeable about the Creative Commons have higher rates of awareness of OER (Table 11).

In an attempt to confirm the local respondents' reported vs. actual lack of knowledge about OER, another chi-square test of independence was utilized. Responses that indicated uncertainty about the most common descriptor of OER, "is available for free" were compared to those responses indicating unawareness of OER. The chi-squared test of independence revealed a significant positive statistical association between these two variables, confirming the local respondents' stated unawareness of OER (Table 14).

Allen and Seaman (2014) reported that about half of the national sample could not assess the quality of open educational resources; the same was true of the local sample. To again affirm lack of awareness of OER, a chi-square test of independence was performed on the cases that stated they were unaware of OER and those who reported they did not know the

quality of OER. A significant positive association was found between these two variables, which again confirmed the respondents' stated unawareness of OER and verified Allen & Seaman's (2014) reported findings (Table 21).

Qualitative Phase

The first qualitative research question was:

How do the respondents' explain their knowledge of, attitudes about, and use of OER? Faculty at the research site responded to the survey questions at similar rates as the national sample of faculty working in public higher education as shown in the phase one statistical analysis. An important outcome of this study was to confirm that the research site was not an outlier in terms of its instructors' awareness of an emerging trend in higher education.

Lack of knowledge about OER was the dominant issue revealed in both phases of the study. This issue seemed to influence the survey respondents' answers to the survey questions about common OER licensing types, features and components of OER, and their abilities to assess OER quality. The case study analysis revealed that lack of knowledge and lack of learning opportunities dominated the responses to the open survey comments. The analysis of the survey comments in the case study helped to explain and more fully describe the need for increasing awareness about OER at the research site.

OER Awareness

As discussed in Chapters 4 and 5, the local respondents are generally unaware of OER. Less than half of the survey respondents reported some awareness of OER. In their development of the OER Awareness questions, Allen and Seaman (2014) discussed concerns

about over-informing the respondents in the wording of the awareness questions in the survey instrument. The local survey commenters shared that they were not aware of OER, and some revealed that the survey itself gave them more information about OER than they had known previous to taking the survey. Allen and Seaman (2014) did concede that the wording of the survey instrument could lead the respondents to overstate their awareness of OER. And, indeed, Allen and Seaman found several results in their 2014 survey analysis that caused them to speculate about the respondents' actual awareness of OER, stating that their respondents may have overestimated their awareness of OER. This phenomenon appeared to also be true of the local sample.

In the responses to the open-ended question that asked the respondents to list examples of open educational resources of which they were aware, the commenters provided 248 discrete examples of educational resources (Table 29). Of these, only 44 were definitely OER. Most of the examples provided by the commenters were repositories of mixed resources, or resources that were definitely not OER. These resources were either licensed resources or proprietary materials or educational tools that are freely available to them on the Internet. At the time of this research, the question of how educators define OER and how they determine if materials are openly licensed has not been explored in the literature.

Some faculty provided comments that indicated they were possibly confusing OER with freely available resources, which was another concern that Allen and Seaman shared in their 2014 report. Survey commenters stated concerns about the veracity and potential bias of OER information and about the peer review process of OER; these are criteria that are commonly applied in the evaluation of open web resources. OER is often peer reviewed, the origin of the

information is identifiable, and, most importantly, OER materials are licensed so that users may modify the materials if updates or corrections are needed.

Wiley, Williams, DeMarte, & Hilton (2016) noted that training faculty to review OER for quality and accuracy is a critical component of OER adoption and that the assessment process is one of several steps to adoption that requires institutional support. The Innovators at the research site chose their OER materials based on the trustworthiness and credibility of the authors/providers of the material. Michelle chose an OpenStax text because the platform's affiliation with Rice University, her use of OpenStax materials as a student, and colleagues in her field had positively reviewed OpenStax. Steve chose his OER materials based on the reputations of the creators of the materials and his professional acquaintance with one of the authors. This finding echoed that of Clements and Pawlowski (2011) who found that the OER users they surveyed would be most likely to choose OER if it originated from a "reputable/trusted institution or person" (p. 9).

The Innovators also reported that they learned about OER through a variety of self-initiated professional development opportunities. Making formal training opportunities available to and convenient for faculty at the research site would surely increase OER awareness (Murphy, 2013; Parisky & Boulay, 2013).

Barriers to OER

The top three deterrents to OER that both the local and national samples of faculty reported in the survey results were: no comprehensive catalog of resources, not enough subject-specific resources, and lack of knowledge about permissions to use or change materials (Fig. 9). Allen and Seaman (2014), anticipating that difficulties finding OER would be a barrier,

included a question in the survey asking respondents to compare the "ease of searching" for both OER and traditional materials, ranked from Very Easy to Very Difficult. The local sample ranked their experiences finding both traditional and OER at almost the same rates (Figure 10). In light of the findings that the a large number of the respondents were either unaware of OER or had reported that they are not users of OER (Tables 18 & 19), without further statistical analysis and better question construction, these results are arguably inconclusive due to the close scores on each ranking.

In the case study, several participants commented that they were unsure where to find OER materials and those who had located materials found them insufficient for their needs. Others stated that OER generally seems geared to traditional disciplines and available materials were not suited to the more specialized programs offered at community colleges. Pawlyshyn, Braddley, Caspar, & Miller (2013) reported that the "dearth of OER" was a major challenge for the faculty group they had studied (p. 6). Hilton, et.al (2016) noted that finding appropriate OER materials is a time consuming barrier that requires support.

An unexpected barrier was found to be significant in the survey comments. The quantitative survey analysis revealed that instructors control the selection of resources for their courses and that 65% of the respondents had primary control over resource selection. The case analysis revealed those groups of faculty who do not have control over the required textbook materials used in their courses viewed this lack of control as a major barrier to adopting OER. Studies that examined faculty perceptions of OER did not make distinctions between groups of faculty, those who may or may not have control over the selection of course resources but these studies were examining faculty groups who had already adopted OER (Bliss et al., 2013; Delimont et al, 2016).

Through close examination of the comments, the case study respondents that reported lack of control over resource selection seem to be adjunct faculty. Research has shown that locus of control and self-efficacy in teaching are major concerns for adjunct faculty in higher education, especially when using new methods (Hardy, Sheppard, & Pilotti, 2017; Mandernach, Register, & O'Donnell, 2015). Inclusion of adjunct faculty in efforts to increase awareness of OER and involving them in OER adoption initiatives could well serve the institution and students since the research site employs approximately 1400 adjunct faculty per term. Both Innovators shared that adjunct faculty involvement would be necessary to any successful OER initiative on campus.

Other barriers to OER that were shared by survey commenters regarded using online resources with students. These concerns ranged from concerns about students having reliable access to the Internet to concerns about reading comprehension. These concerns are understandable, particularly in the community college environment. Parisky and Boulay (2013) and Young (2016) reported that reliable access to the Internet is a prevalent issue in the use of online texts. Young (2016) noted that since the populations typically served by community colleges, i.e. lower-income and minority students, have less access to broadband Internet at home (citing U.S. Department of Commerce, 2013), requiring the use of exclusively online resources must be considered with particular care. However, deNoyelles, Raible, and Seilhamer (2015) reported that, when given a choice between paper and electronic versions of a course text, students chose the electronic text because of the lower costs of e-texts and perceived convenience of the format.

Bliss et al. (2013a) found that some students did have difficulty with their online OER text and that some students struggled with using the Internet to access the text. Harley et al.

(2010) also reported that electronic materials were a challenge in general for instructors. Preparing faculty to assist students with the use of electronic resources, determining the impact of Internet access for students, and issues with reading comprehension are beyond the scope of this study but these valid concerns should certainly be addressed in any OER initiative at the research site. It is important to note here that many OER texts are available in print for very low cost. As the Innovators reported, their students were able to print sections of their textbooks and were also able to purchase the printed textbook.

The survey commenters also mentioned the lack of ancillary resources like test banks and other supplementary materials being of concern to them. The OER research literature does not address this issue specifically, likely because the development of text ancillaries is a longer-term issue in the overall spectrum of OER development and adoption. Another OER barrier communicated by the case study participants was the amount of time necessary to learn about, find, and potentially adopt OER. This concern will be addressed under Institutional Support.

The Innovators did not encounter significant barriers to OER adoption beyond transitioning their courses to new texts and did not report that their students experienced specific difficulties with the electronic materials. However, the development of an adequate test bank to accompany the OER textbook was a significant but not insurmountable barrier for one of the Innovators. This work could have been easier and more efficient for this Innovator if she had access to institutional supports such as a course release (time) and/ or other assistance.

Benefits of OER

As previously mentioned, the statistical results in phase one revealed that the faculty considered cost one of their top criteria in the selection of course resources as opposed to their

national peers who considered cost least important. The case study analysis revealed that cost and flexibility of OER materials were the two main benefits noted by the survey commenters and the Innovators. The rising cost of higher education coupled with the high cost of traditionally published texts is a driving force in OER adoptions (Hilton, 2016). Cost savings for students was a common motivator behind every OER initiative reported in the literature and was the subject of dozens of non-empirical articles on OER. Educators seem interested in the idea of open resources because the cost of tuition is not within an individual faculty member's control. Reducing or eliminating the costs whenever possible is a direct way that instructors can alleviate financial pressure on students.

Several survey commenters stated that they were interested in exploring OER options mainly because of cost to students but they had concerns about sacrificing quality. The Innovators' main motivation to adopt OER was to provide students with a high quality course text at no cost. In studies that examined faculty perceptions, reduction or alleviation of cost to students was one of the benefits of OER reported by faculty and a source of student satisfaction (Bliss, Robinson, Hilton, & Wiley, 2013; Bliss, Hilton, Wiley & Thanos, 2013; Delimont et al., 2016; Petrides et al., 2011; Pitt, 2015; Rolfe, 2012). Cost savings was a theme that appeared throughout the case examination. One of the Innovators in the case study noted that cost seemed to be a "top of mind" issue for colleagues in his discipline.

The Innovators anecdotally reported that their students having access to the course text on the first day of class was beneficial. Buczynski (2007) found that students who do not purchase course materials have lower achievement rates and slower progression to degree completion. Skinner and Howes (2013) detailed the many benefits to both student and instructor when the student reads the course text but these benefits are obviously unrealized if

the student does not have access to the text. To reiterate an important finding, the U.S. Student PIRG's (2014) survey of 2039 students found that 65% of the respondents do not purchase their course texts although 95% of these students knew that not reading the course texts would hurt their grades.

Course Resources

The survey covered several topics addressing the selection course resources, including assessment of the perceived quality of both traditional and open resources, the respondents' experiences in the use of open resources, and criteria that faculty use to select course resources. Faculty at the research site, like their national peers, chose proven efficacy, trusted quality, and subject coverage as their top three selection factors when choosing course resources. Around half of the survey respondents reported that they could not assess the quality of OER, which is understandable given that the majority of the sample reported that they are generally unaware of OER. Additionally, there are currently only eight published empirical studies at the time of this writing that examine the student learning outcomes of OER so it can be argued that that efficacy of OER has not yet been widely proven and could be a factor in the respondents' lack of awareness (Allen et al., 2015; Bowen et al., 2014; Feldstein et al., 2012; Hilton & Leman, 2012; Pawlyshyn et al., 2013; Hilton et al., 2013; Robinson et al., 2014; Fischer et al., 2015).

In terms of their comparison and rankings of OER vs. traditional resources, again, lack of OER awareness influenced the statistical results and the outcomes of the case analysis. When comparing OER and traditional materials, survey respondents found traditional materials superior on one dimension: "includes all the materials I need" but it is unclear what those needs actually are. A review of the literature on the subject of general evaluative criteria that higher

education faculty use to choose course texts yielded no useful results published within the last ten years. Textbook evaluation is discipline-specific and quite subjective given the variety of topical areas that may be required to meet course objectives.

The subjects of the case study reported that the textbook publishing industry is a troubling aspect of teaching in higher education and is a concerning factor for faculty concerned about in college affordability. However, in the first phase of the study faculty did admit to being somewhat dissatisfied with traditionally published resources but fully one-third of respondents stated they were unable to evaluate traditionally published materials. Only 17% of the survey respondents considered materials from traditional publishers as "excellent." Since faculty at the research site are largely unaware of alternatives to the traditional textbook, it seems that increasing awareness and providing support for using both OER and traditional materials is an important first step in addressing faculty concerns about college affordability at the research site.

Institutional Support and its Model

The second qualitative research question was:

What type of institutional supports do experienced faculty recommend to support other educators considering OER?

As shown in both phases of the study, faculty members at the research site seem poised to consider OER since the factors they reported as important to them: student satisfaction, quality, flexibility, currency, and, of course, cost, are characteristics that have been hypothesized to be major benefits of OER (Allen and Seaman, 2013; Bissell, 2009; Johnstone, 2005, D'Antoni, 2009). Analysis of the case study highlighted that many of the survey

commenters indicated interest in learning more about open resources. The case analysis also revealed the aspects of OER that respondents found interesting and challenging and factors they found most motivating. The OER Innovators, as exemplars for potential early adopters, shared their own challenges and successes and their ideas for how their own innovative behaviors might be replicated in the broader faculty population.

Innovativeness, according to Rogers (2003) is the "bottom line behavior" in the diffusion process (p. 268). As Rogers (2003) and others have stated, it is critical to study the activities, opinions, and the intrinsic and extrinsic motivations of innovators in any diffusion process, as they are the first to try an innovation and typically influence the next wave of adopters (Greenhalgh et.al, 2004; Hixon, et.al, 2011; Lee, Cheung, & Chen, 2005; Ventakesh, 1999). Eleven potential "early adopters," those who stated intent to investigate and try OER in their courses, were identified in the quantitative analysis. Partnering these and other potential early adopters with OER innovators at the research site is an important element of the proposed model for institutional support. As noted in the diffusion theory literature review, the participation and sharing of experiences of faculty who have already tried the innovation is most beneficial to the spread of new ideas (Bennett & Bennett, 2002; Hixon et al., 2012; Shea, Pickett, & Li, 2005).

In the interview phase of this study, the Innovators offered a variety of ideas about how the institution could support OER. These supports, as reported in the case study, were categorized at the disciplinary, departmental, and institutional levels. It is apparent from the results of both phases of this study that increasing general knowledge and awareness of OER should be the first step in a program of support. A college-wide approach including a variety of stakeholders would likely work best at the research site. Increasing awareness is an obvious

first step but any OER initiative should be collaborative and somewhat iterative in its approach, with each stage of progression informing the next and every group of people working on OER keeping the other groups informed. A proposed model for institutional support for OER is presented in Figure 12.

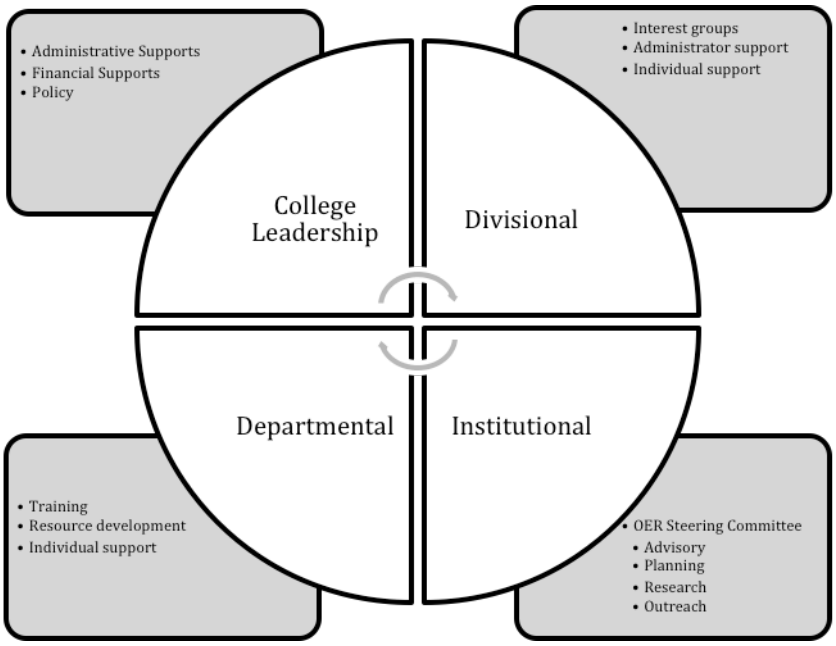


Figure 12: Proposed Model for Institutional Support

Discipline-Level Support. As one Innovator noted, the institution might best help faculty by simply letting faculty come together. Encouraging OER interest groups at the division level would be a useful first step to gauging interest and providing support for early adopters. Rolfe (2012) found that sharing materials with close colleagues was beneficial to

OER adopters. In their study of the diffusion of online teaching conducted in 2005, Shea, Pickett, and Li found that in terms of faculty development, engaging experienced faculty who can share their own experiences are likely to "strike a resonant chord with other potential adopters of the innovation" (p. 11). Innovators and early adopters in any diffusion process provide both inspiration and a sense of safety for those who enter the adoption process at a later stage (Figure 1, Rogers, 2003).

The interest groups suggested by the Innovators would likely generate another benefit for faculty that has not been discussed in the research literature. The intellectual stimulation and engagement of working together on building discipline resources that would benefit their students could do much to improve the collaborative culture among faculty. The case study revealed that the Innovators worked on OER in isolation from their direct colleagues. Other faculty expressed that they felt excluded or detached from the decision making process around resource selection. Both Innovators expressed desire to collaborate with like-minded colleagues on OER initiatives and both committed their support to other interested faculty members.

Division administrator support for OER was mentioned in the case study as an important element of OER adoption. One of the Innovators noted that she was cognizant of an element of personal risk in trying a new approach in her teaching: adopting a free OER textbook and redeveloping a core introductory course around that text was a somewhat radical innovation. Student retention and student evaluations are used in faculty evaluations so the element of risk was higher for this Innovator, particularly because, as she admitted, the first implementation of the OER in her course was challenging for both instructor and students.

The two Innovators in this study were both full-time, tenured, senior faculty. Both suggested that, with support from their administrators and guidance from experienced

colleagues, less senior full time and adjunct faculty members might also be willing to try adopting OER. Indeed, as evidenced in the case study, some adjunct faculty seemed to be just as keen as full time faculty to attempt new methods to help their students be more successful.

Some faculty may need to assurances that their direct administrator supports innovations such as OER. One participant stated her belief that "there is no incentive to innovate" at the research site. Although that statement seems a serious indictment of the institution, it must be said that faculty are the instigators of innovation in teaching and learning at the research site, so faculty must champion a progressive, innovative environment that benefits student learning. That said, innovative practice does not seem to occur in the open at the research site, so less secure faculty are likely to feel dissuaded from trying new approaches. As Delimont et al. (2016) learned from their qualitative examination of OER users at Kansas State University, institutional support and professional credit in tenure and promotion decisions would motivate more instructors to explore and implement OER.

Department-Level Support. The statistical analysis phase of this study provided a convenient road map for training opportunities. An OER training program could include the following topics that were covered in the survey: common characteristics of openly licensed materials, Creative Commons training, finding and evaluating resources, editing/modifying resources, and methods for distribution of OER resources to students. Another crucial element would be to identify college departments dedicated to OER support.

In addition to lack of awareness, the principle barrier reported by faculty in both phases of the study was difficulty in locating and evaluating OER. One of the Innovators suggested that an academic support department could develop a resource guide for faculty to use as a reference point to start exploring OER that would include a selection of high quality open

resources. Another suggestion was to identify a college department that would be responsible for providing appropriate supports for faculty.

In institutions with active OER initiatives, librarians and/or instructional designers typically assist instructors who are considering or have already adopted OER (Hess, Nann, & Riddle, 2016; Salem, 2017; Walz, 2015). Assistance typically includes helping faculty find appropriate OER materials, verifying the licensing of materials, assisting in modifying resources to suit the faculty member's needs, assistance in developing and licensing original OER materials, and providing general training.

As reported in the case study, both Innovators stated that they felt empowered to explore and adopt OER based on information provided by the college library in 2013 and their attendance at an in-service day event that featured open resources lead by the college's librarians in 2014. The institution provided support for this day of learning, which was funded by the office of the Vice President of Academic Affairs. The in-service day event was a collaboration between the Library and the Teaching and Learning Center, and, as mentioned, the office of the Academic Vice President. Maintaining the momentum started at this event did not occur primarily because there was no leadership support or dedicated time for the Library or another academic department to take the initiative on OER.

Institution-Level Support. The Innovators suggested that a steering committee on OER that would direct and assist in OER initiatives at the research site would be beneficial. This steering committee would include the variety of stakeholders suggested in the case study: full and part time faculty, academic administrators, library faculty, professional development staff, and instructional technology staff. The charge of the OER steering group could be to consult and assist on the development of initial training resources for faculty, explore the OER

literature to develop best practices, provide support for early adopters, and to potentially develop institutional guidelines for OER adoption and creation at the research site. As adoption of OER becomes an established practice at the research site, the steering committee could connect with other college departments to seek out grant funding, conduct research studies on OER, and develop relationships with our local peer institutions to co-create and share OER materials. As indicated by the research of Porter and Graham (2016), adoption of an innovation tends to increase when instructors recognize that institutional priorities are congruent with their own and when dedicated institutional support is provided.

Portland State University reported the recommendations of its "Reduce Student Costs Taskforce" that reviewed "models and strategies and make recommendations for lowering course materials costs for PSU students" (Moody et al., 2015, p. 3). Working within a limited timeframe, this taskforce included a variety of stakeholders and developed recommendations for the institution. PSU's report outlined a list of strategies to move the institution toward a formal commitment to reduce cost to students, including supporting OER adoption efforts. PSU's taskforce report could be considered by the research site's OER steering committee as one potential model for its work.

OER as an Institutional Priority. To accomplish any of the above recommendations for OER at the research site, support for OER initiatives by college leadership would be necessary. As discussed throughout this report, faculty interest provides the impetus for the development of OER initiatives. It bears repeating here that all OER programs and research studies cited in this study had some level of support from the leaders of the respective institutions. Support for OER was described in the literature as mainly financial and managerial in that the institution provided faculty with time to work on OER (Pawlyshyn et al., 2013, Pitt, 2015), facilitated the

development of committees to investigate OER best practices (Moody et al., 2015), invested in an OER delivery platform (Hilton & Leman 2012; Feldstein et al., 2012), invested resources for pilot programs (Wiley, Williams, DeMarte, & Hilton, 2016), secured grant funding (Hilton & Leman, 2012; Lovett, Meyer, and Thille, 2008), supported multi-campus OER initiatives (Florida Virtual Campus, 2016), and provided other types of support that can only be facilitated by leaders of the institution.

Wiley, Williams, DeMarte, & Hilton (2016) reported on a pilot "Z-Degree" (zero-cost resources degree) initiative at Tidewater Community College. Part of Tidewater's plan to implement and sustain OER at the college was to increase tuition revenue by eliminating textbook costs. The Z-Degree pilot was implemented as a single degree program and was designed to decrease drop rates and to facilitate students' enrollment in additional courses through financial savings. The researchers predicted a tuition revenue gain year over year in addition to increased retention and graduation rates. The institution supported this initiative by working collaboratively with faculty, developing and offering the degree, and providing the statistical information and forecasting the potential revenue gains.

Training for academic administrators may also be required to prepare them to support OER initiatives and to collaborate closely with faculty. Allen and Seaman reported in 2011 that more than half of the academic leaders they surveyed considered themselves aware of OER. And two-thirds of those academic leaders agreed that OER had potential for reducing costs at their institutions and could save time in the development of new courses. However, Allen and Seaman (2014) reported that the academic leaders they surveyed in 2012 had extensively over-reported their awareness of OER.

As mentioned by some case study participants, the institution should not mandate OER initiatives. Pawlyshyn et al. (2013) made this same recommendation. The researchers' stated, "Introduce and facilitate OER efforts through faculty initiative rather than top-down institutional directive. Eventually, institutional policy must support emergent practice" (p. 5). If reducing costs for students were to become an institutional priority at the research site, the initiative would require collaboration from all critical stakeholders.

Implications and Recommendations

This study provided insight into faculty knowledge and attitudes about open educational resources and made recommendations for institutional support for OER initiatives at a large single-campus community college. The major contribution of this study was that there are no published replications of Allen and Seaman's oft-cited 2014 survey with community college faculty. This study expanded on Allen and Seaman's work through the use of a mixed methods design to more closely examine the data resulting from their survey instrument, to compare their national results to a sample of faculty at a single institution, and to use qualitative analysis to further explain the statistical results. The use of a sequential explanatory design added value to the study results and the mixed methods interpretation facilitated a more complete understanding of the research problems.

Since the topic of open educational resources is at the nascent stage of exploration at the research site, the results of this study were aimed at numerous stakeholders including faculty, academic support departments, administrators, and college leaders. The statistical results of the first phase of this study indicated that instructors at the research site require support and guidance to consider OER as a viable alternative to traditional course resources.

The qualitative case study conducted in the second phase of the study revealed that the respondents, though motivated to make college more affordable for students, are not yet at a stage of readiness to adopt OER.

Recommendations for institutional supports were made to increase awareness of OER and how college leaders can assist faculty in their investigation and potential adoption of OER. The model for institutional support includes multiple options for utilizing the outcomes of this study to introduce faculty to OER and to facilitate support for OER users (Figure 12). Some aspects of the institutional support model can be quickly implemented at the research site, such as developing basic training on locating and using OER. The survey responses provide guidance on knowledge areas in which the respondents require the most support, such as the Creative Commons and other common features of OER.

Future Research

One of the primary challenges of OER adoption is long-term sustainability and growth of OER programs (D'Antoni, 2008; Wiley, 2006; Wiley, Williams, DeMarte, & Hilton, 2016). Since the site at which this research was conducted is currently at a point of "prior conditions" in the adoption process, continuing to gather data on the use of OER from the very beginning of the adoption process would be crucial to studying diffusion at the research site (Rogers, 2003).

A barrier to OER adoption for many instructors was either the poor quality or the complete lack of ancillary materials and learning tools to accompany OER texts. The research literature does not address how to best support faculty in the development and use of these

necessary tools. Examining the development and use of OER ancillary materials would be a useful addition to the research on OER.

An interesting prospect for future research would be to implement some, or all, of the recommendations for institutional supports at the research site then repeat the survey replication to determine if OER awareness and adoption increases in the local sample. Also customizing Allen and Seaman's survey to better fit the institution and adapting some aspects of the instrument would be beneficial.

As mentioned by the Innovators, conducting empirical research on the efficacy of OER at the research site could add to the small but growing collection of OER research literature. In this study, faculty at the research site displayed concern for student success and the impact of the cost of higher education on their students' lives. Research that illustrates that student learning is improved, or is at least not impeded, by the use of OER is likely to positively influence faculty at the research site.

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APPENDICES

APPENDIX A

SURVEY REPLICATION PERMISSION

Request for Permission

October 14, 2015

Babson Survey Research Group
Quahog Research Group, LLC.
Dr. I. Elaine Allen, Co-Director.
Dr. Jeff Seaman, Co-Director.
6924 Thornhill Drive
Oakland, CA 94611

Dear Drs. Allen and Seaman,

I hope this finds you well. I am a doctoral student in the Educational Technology, Research, and Assessment program at Northern Illinois University under the direction of a dissertation committee chaired by Dr. Pi-Sui Hsu.

I am writing to request your permission to replicate your survey, Opening the Curriculum 2014, as part of my dissertation research. My proposed mixed methods study is tentatively titled "Community College faculty attitudes toward open educational resources: A single-institution replication of Allen and Seaman's 2014 national survey with follow-up explanatory interviews."

I am a tenured Professor and Reference Librarian at a large Midwestern Community College, the second largest public institution of higher education in our state. The College has 35,000 students, 300 full-time faculty members, and approximately 1500 adjunct faculty members. The College has not yet begun to formally explore the possibilities of open access resources. Your survey reports on OER have been an excellent resource for framing informal discussions among the faculty at the College.

The ultimate goal of my dissertation research is to identify appropriate Institutional supports for faculty who are interested in implementing OER into the curriculum. Replicating your survey with the full- and part-time faculty at the College would be a solid first step toward that goal. As indicated by my study title, I plan to interview some faculty to more deeply examine their responses to the survey questions and to learn about the supports they feel would assist them in implementing OER in their courses.

I request your permission to replicate your survey under the following conditions:

- The survey will be used only as part of my dissertation research study.
- The survey will be implemented securely through Northern Illinois University's Qualtrics account and will include appropriate copyright statements and attribution to your work.

- The survey will be distributed only to faculty who are employed by the College during the data collection period.
- The survey implementation will have a definite timeframe, and link/s to the survey will be deactivated at the end of the data collection period.
- Any future reports or publications that include the survey results will include appropriate citations and attributions to your work.
- The respondents to the replicated survey will have the same privacy protections as other participants in survey research conducted by BSRG/Quahog Research, LLC. (http://quahogresearch.com/privacy.html)
- My dissertation committee will closely monitor the privacy of respondents and the protection of your work.
- Upon completion, a copy of my research report will be submitted to you.
- And, any other protections or conditions required by the Babson Research Group and Quahog Research Group, LLC.

If these conditions are acceptable to you, please indicate by signing this letter below and returning a copy to me using the enclosed envelope, or replying to me with your permission via email to: cotede@cod.edu.

Signature: _____

I appreciate your consideration.

With Regards,

Denise Cote
PhD Candidate: ETRA
Northern Illinois University
DeKalb, Illinois.
cotede@cod.edu
630-942-2092
Dissertation Chair: Dr. Pi-Sui Hsu, phsu@niu.ed

CC: Dr. Pi Sui Hsu, NIU-ETRA

Response from Dr. J. Seaman with Qualtrics survey file

Use of survey

Jeff Seaman [jseaman@seagullhaven.com]

You replied on 10/23/2015 9:01 AM.

Sent: Thursday, October 22, 2015 6:51 PM
To: Cote, Denise
Attachments: FacultyOER2014.qsf (64 KB)

Denise,

We would be pleased to have you use the survey from "Opening the Curriculum" - we are happy with all of the conditions that you outlined.

Since you mentioned that you were going to use Qualtrics, I have attached a Qualtrics version of the survey - you should be able to just load this and avoid having to reprogram the questions. Would you like copies of our national-level results to use for comparison purposes? I can provide the overall national results and those for only public institutions - bot as Excel spreadsheets.

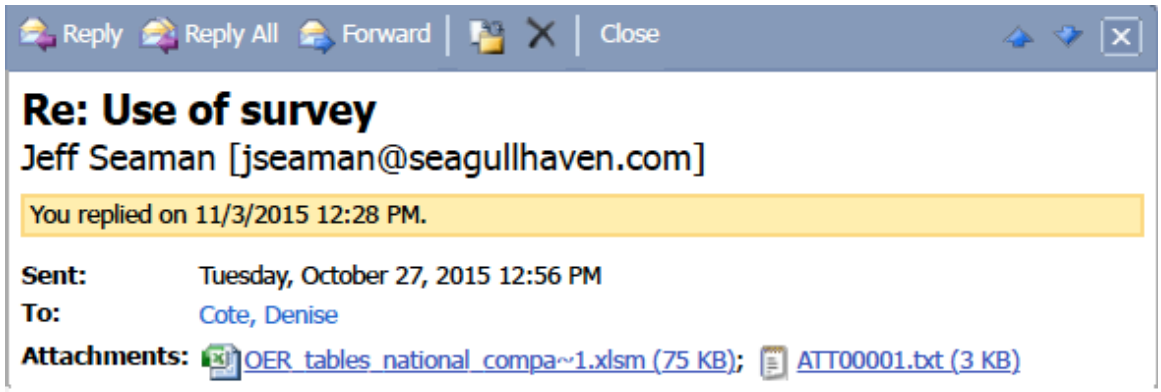
One note - when do you plan to begin your research? We are working now on the 2015 version of the survey - and I would be pleased to provide that as well.

Best,

-jeff

Dr. Jeff Seaman

Response from Dr. J. Seaman with 2014 data



Re: Use of survey

Jeff Seaman [jseaman@seagullhaven.com]

You replied on 11/3/2015 12:28 PM.

Sent: Tuesday, October 27, 2015 12:56 PM
To: Cote, Denise
Attachments: OER_tables_national_compa~1.xlsm (75 KB); ATT00001.txt (3 KB)

Denise,

I've attached an excel spreadsheet of a series of tables of the OER results from both national public institutions and for all national institutions.

The full national data is the same as used in the "Opening .." report.

The national data for public institutions was used in our latest report - a state-level examination in North Dakota - you can download that report at: http://www.onlinelearningsurvey.com/oer.html

I'd be happy to run any other tables if you might need them for comparison purposes - just let me know.

Best regards,

-jeff

APPENDIX B

INSTITUTIONAL REVIEW BOARD PERMISSIONS

Northern Illinois University IRB Permission

Approval Notice
Initial Review

04-Apr-2016

TO: Denise Cote
Educational Technology, Research, and Assessment

RE: Protocol # HS16-0119 "**Community college faculty attitudes towards open educational resources: A mixed methods study**"

Your **Initial Review** submission was reviewed and approved under **Expedited** procedures by Institutional Review Board #1 on **02-Apr-2016**. Please note the following information about your approved research protocol:

Protocol Approval period: **02-Apr-2016 - 01-Apr-2017**

If your project will continue beyond that date, or if you intend to make modifications to the study, you will need additional approval and should contact the Office of Research Compliance and Integrity for assistance. Continuing review of the project, conducted at least annually, will be necessary until you no longer retain any identifiers that could link the subjects to the data collected. Please remember to use your **protocol number** (**HS16-0119**) on any documents or correspondence with the IRB concerning your research protocol.

Please note that the IRB has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Unless you have been approved for a waiver of the written signature of informed consent, this notice includes a date-stamped copy of the approved consent form for your use. NIU policy requires that informed consent documents given to subjects participating in non-exempt research bear the approval stamp of the NIU IRB. This stamped document is the only consent form that may be photocopied for distribution to study participants.

It is important for you to note that as a research investigator involved with human subjects, you are responsible for ensuring that this project has current IRB approval at all times, and for retaining the signed consent forms obtained from your subjects for a minimum of three years after the study is concluded. If consent for the study is being given by proxy (guardian, etc.), it is your responsibility to document the authority of that person to consent for the subject. Also, the committee recommends that you include an acknowledgment by the subject, or the subject's representative, that he or she has received a copy of the consent form. In addition, you are required to promptly report to the IRB any injuries or other unanticipated problems or risks to subjects and others. The IRB extends best wishes for success in your research endeavors.

IRB Continuance

March 4, 2017

TO: The Office of Research Compliance, Integrity, and Safety. Northern Illinois University.

From: Denise Cote, Ph.D. Candidate, ETRA. Committee Chair, Dr. Pi-Sui Hsu.

RE: Continuation of Approval of Research Involving the Use of Human Subjects.

1.) The number of subjects who have participated in the study since last approval: 346.
2.) There have been zero (0) adverse events, unanticipated problems, withdrawals, complaints, or newly identified risks associated with the study.

NORTHERN ILLINOIS UNIVERSITY

Office of Research Compliance, Integrity & Safety

Division of Research & Innovation Partnerships

Assurance # FWA-4025

APPLICATION FOR CONTINUATION OF APPROVAL OF RESEARCH INVOLVING THE USE OF HUMAN SUBJECTS

NOTE: For research in progress, current policy requires that IRB (Institutional Review Board) obtain continuing assurance at least annually that no procedural changes have occurred in your research project involving the use of human subjects. **Any unanticipated risks to the subjects, or new information that may affect the risk/benefit assessment must be promptly reported to, and reviewed by, the Institutional Review Board (IRB). Continuing review of non-exempt projects is required until the investigator no longer retains any identifiers (e.g., names, code numbers, pseudonyms, demographics) that could link the data to the subjects.**

PROJECT TITLE: ***Community college faculty attitudes towards open educational resources: A mixed methods study***
PRINCIPAL INVESTIGATOR: Cote, Denise

DEPARTMENT: Educational Technology, Research and Assessment

TELEPHONE:

E-mail: denisecote@gmail.com

Review Committee: Institutional Review Board #1

Expiration date:	01-Apr-2017	Category:	Expedited

To insure uninterrupted data collection for this project, the completed form and accompanying materials are due in the ORC ten days before the expiration date

PROJECT UPDATE

Please make a selection from the list below *(check one)* that most closely describes the status of your project **and** provide answers to the questions at the top of of Page 2. Attach a separate page if additional explanation is necessary.

PLEASE COMPLETE

○ This project is continuing as described in the original, approved, IRB application. Identifiable data continues to be obtained from research subjects/participants. [A "clean" (unstamped) copy of the informed consent document* is attached to obtain an updated approval stamp – unless waiver of informed consent was used in the past.]

○ This project is continuing but approval to make *minor* revisions is requested. The revisions may not be implemented until IRB approval is granted. [Attached are a description of the requested revisions, including justification, and a "clean" (unstamped) copy of the informed consent document to obtain an updated approval stamp. **If *significant* changes have occurred a new "Institutional Review" application form must be completed and submitted for review.]**

○ This project is continuing as previously approved but subject recruitment is complete; analysis of identifiable data continues. (No consent/assent form is attached.)

● Subject recruitment is complete and all identifiers have been removed from data. Only analysis of unidentifiable data continues. (No further continuing review will be required.)

○ This project has been completed or discontinued.

PLEASE COMPLETE FOR ALL PROJECTS (even if study is completed or discontinued).

1. **Provide the number of subjects who have participated in this study since the last approval:**

   It may help you to know that you were originally approved to run 500.00 participants in this study, and you reported that 0.00 participated prior to last year's approval.

2. **Provide on a separate page, an explanation if any of the following have occurred (Do not leave blank; if none, enter ("0"):**
   - **The number of *adverse events or unanticipated problems* involving risks to subjects or others**
   - **The number of subjects who *withdrew* from the research**
   - **The number of *complaints* about the research**
   - **Any recent literature, findings, or other relevant information that impacts your study, keeping in mind that the primary concern is the potential risk (physical, emotional, or otherwise), to the subjects.**

CERTIFICATION

No changes, except those discussed in the attached explanation section (if any), have been made to the protocol previously approved by the IRB.

Denisa Cote 03-04-2017

Signature of **Principal Investigator** Date

Research Site IRB Permission

College of DuPage
Institutional Review Board
Human Participants Review Form

Title of Research Project:	Community College Faculty Attitudes Toward Open Educational Resources: A Mixed Methods Study.
Date of Request:	April 9, 2016
Principal Investigator(s)/Project Director(s):	Denise Cote, Professor, Reference Librarian, College of DuPage.
Co-Investigators/Student-Investigators:	Dr. Pi-Sui Hsu, Professor, Educational Technology, Research, & Assessment, Northern Illinois University.

Principal Investigator/Project Director Contact Information	
Department:	Library
Address:	SRC 3133
Phone:	630-942-2092
Email:	cotede@cod.edu

Proposed Project Dates:	April 2016-October 2016
Location of Project:	College of DuPage
Other Organizations or Agencies, if any, involved in project	Northern Illinois University. *The IRB of this institution has approved this research. See Appendix A.*

Please supply the following information:

I. Project Information:

A. Project Activity Status:

X New Project
❑ Periodic Review of Continuing Project
❑ Revision to Previously Approved Project

B. This project involves College of DuPage students as participants

❑ Yes X No

C. This project involves College of DuPage employees as participants

X Yes ❑No

Qualitative

1. **How do the respondents' explain their knowledge of, attitudes about, and use of OER?**
2. **What type of institutional supports do respondents think would be necessary to implement OER into their curriculum?**

Mixed methods

1. **How can the descriptive statistical results from the quantitative strand of the study be explained using the results from the qualitative strand?**

III. Protocol (Who will be the research participants? How will they be solicited or contacted? Include any recruitment letters or other recruitment materials with this document; how much time will be required of each participant? Describe procedures to which humans will be subjected – use additional pages if necessary.)

Eligible participants will be all full and part time instructors employed at the research site during the time of the survey. Participants will be excluded if they do not teach credit-bearing or non-credit full courses.

An invitation to participate in the quantitative phase of the study, the online survey, will be sent to faculty via campus email. Completion of the survey will take approximately 15 minutes of the participant's time. Reminder emails will be sent periodically during the time the survey is open.

Recruitment emails for both phases of the study are located in Appendix D.

The outcome of the quantitative phase will dictate the exact number of interview participants and the development of the interview questions for the second phase of the study. The second phase of the study, the qualitative phase, will commence approximately one month after the closing of the first phase of the study. The second phase will consist of 60 minute interviews of at least eight (8) purposefully selected participants. The interview data will be collected via audio recordings which will be transcribed. The interview participants will be invited to read the transcript of their interview in order to clarify their responses.

V. Precautions (What steps will be taken to ensure that participation from each individual is voluntary? What, if any, inducements will be offered to the participants for their participation?)

The survey participants will self-select in the first phase of the study. In the survey, participants will indicate their willingness to be interviewed in the second phase of the study. From this pool of volunteers, the sample for the qualitative phase of the study will be purposely selected based upon their survey responses and other factors that address the research questions of this study.

The survey in phase one of the study will be prefaced by an informed consent form, which the respondents must affirm before entering the survey. In Phase Two, the interviewees will sign an additional consent form. The consent forms are attached in Appendix E.

- Any problems connected with the use of human subjects once the project has begun must be communicated to the IRB Co-Chairs.
- The principal investigator is responsible for retaining informed consent documents for a period of three years after the project.

I certify that the protocol and method of obtaining informed consent as approved by the College of DuPage Institutional Review Board will be followed during the period covered by this research project. Any future changes to the research project will be submitted to the IRB for review and approval prior to implementation.

T Louise Cote — 4-11-2016

Principle Investigator/Project Director Signature — Date

Co-Investigator/Student-Investigators Signature (if appropriate) — Date

Signature of IRB Co-Chair:	Date: 4/14/2016
Signature of IRB Co-Chair:	Date: 4/14/2016
Disposition: ☒ Approved ☐ Approved with Conditions ☐ Referred for Full Committee Review	

APPENDIX C

INFORMED CONSENT

Informed Consent: Online Survey

I agree to participate in the research project titled "Examining Community College Faculty Attitudes Toward Open Educational Resources: A Mixed Methods Study" being conducted by Denise Cote, a doctoral candidate at Northern Illinois University. I have been informed that the purpose of this mixed methods study is to explore faculty knowledge of and attitudes about open educational resources at the College of DuPage through an online survey and individual interviews.

I understand that if I agree to participate in this study, I will be asked to complete an online survey. I am also aware that selected survey participants will be invited to participate in an optional in-person interview. I acknowledge that interview participants will be asked to give additional consent using a different form.

I am aware that my participation is voluntary and may be withdrawn at any time without penalty or prejudice, and that if I have any additional questions concerning this study, I may contact Dr. Pi Sui Hsu, Northern Illinois University, (815) 753-6025. I understand that if I wish further information regarding my rights as a research subject, I may contact the Office of Research Compliance at Northern Illinois University at (815) 753-8588.

I understand that the intended benefits of this study include gauging COD faculty's knowledge of and interest in open educational resources and the identification of necessary institutional supports and professional development opportunities on open access resources for interested faculty. I also understand that an important benefit of this study is to add to the growing body of empirical knowledge about the nature of open resource usage by community college faculty.

I have been informed that there are no potential risks to myself by participating in this study. I understand that all information gathered during this study will be kept confidential. The researcher alone will have access to the email addresses of the participants, should they choose to give them, and that individual faculty will not be identifiable in the reported study results. Participants' email addresses will be excluded from any future sharing and/or publication of the dataset.

I understand that my consent to participate in this project does not constitute a waiver of any legal rights or redress I might have as a result of my participation, and I acknowledge that I have received a copy of this consent form. A printable electronic copy of this consent form is available at: [web address of survey]

By clicking the "I give my consent" button below I am acknowledging that I am a faculty member at the College of DuPage and give my consent to participate in this research study.

Informed Consent: Interviews

I agree to participate in the research project titled "Examining Community College Faculty Attitudes Toward Open Educational Resources: A Mixed Methods Study" being conducted by Denise Cote, a doctoral candidate at Northern Illinois University. I have been informed that the purpose of this mixed methods study is to explore faculty knowledge of and attitudes about open educational resources at the College of DuPage through an online survey and individual interviews.

By agreeing to participate in the interview strand of this mixed methods study, I confirm that I have completed the online survey (web address of survey) and have indicated my willingness to be interviewed by the researcher. I understand that the interview will involve questions about my opinion of and experience with open educational resources.

I am aware that my participation is voluntary and may be withdrawn at any time without penalty or prejudice, and that if I have any additional questions concerning this study, I may contact Dr. Pi Sui Hsu, Northern Illinois University, (815) 753-6025. I understand that if I wish further information regarding my rights as a research subject, I may contact the Office of Research Compliance at Northern Illinois University at (815) 753-8588.

I am aware that my interview will be recorded to accurately record the information I provide and that the recording will be used for transcription purposes only. I also understand that I can elect to not be audiotaped and I may request that the audio recorder be turned off at any point during the interview. If I decline to be audiotaped, the researcher will record the interview via handwritten notes. I also know that I can stop the interview at any time.

I expect to participate in one interview that will consist of approximately X questions. If the researcher requires further information from me after the conclusion of the interview, she will request it via email/phone. I can choose to decline to give additional information.

I understand there is no direct benefit to myself individually from taking part in this study. I also acknowledge that I am not receiving compensation of any kind in exchange for my participation in this research.

I understand that if results of this study are published or presented, individual names and other personally identifiable information will not be used. In order to protect my anonymity, I will be identified only by my work status and discipline ("Full-time Humanities faculty", "Part-time Mathematics faculty").

I understand that the researcher will store the audio recording and transcription of my interview for up to five years in a secure location and that the information I provide may be used in future studies with the same protections of my identity.

CONSENT

You will be given a copy of this consent form to keep for your own records.

If you wish to participate in this study, please sign and date below.

_____
Participant's Name *(please print)*

_____ _____
Participant's Signature Date

_____
Researcher's Name *(please print)*

_____ _____
Researcher's Signature Date

APPENDIX D

SURVEY INSTRUMENT (ALLEN & SEAMAN, 2014)

Q0 Incentive
Do you wish to be entered into the drawing for an incentive?
Yes (1)
No (2)
If yes, please enter your email address: FREE TEXT BOX

Q1 Gender

Gender
Male (1)
Female (2)

Q2 Tenure

Teaching Status
Part-time (1)
Full-time (2)

Q3

Number of Years Teaching
Less than 1 (1)
1 to 3 (2)
4 to 5 (3)
6 to 9 (4)
10 to 15 (5)
16 to 20 (6)
More than 20 (7)

Q4 Discipline

Your primary discipline (choose the discipline that most accurately describes your work)
Arts and Literature (1)
Business (2)
Computer and Information Science (3)
Economics (4)
Education (5)
Engineering (6)
Humanities (7)
Law (8)
Linguistics / Languages (9)
Mathematics (10)
Medicine (11)
Natural Sciences (12)
Philosophy (13)
Psychology (14)

Social Sciences (15) Other (16)

Q5 Prog
What is your program assignment at COD? (Ex. English, Nursing, Anthropology, Automotive, etc.) FREE TEXT BOX
Age

Your Age: Under 25 (1) 25 - 34 (2) 35 - 44 (3) 45 - 54 (4) 55+ (5)

Q6 Teach
Which of the following have you taught during the most recent academic year? Please use the following definitions: Face-to-face Course: A course where all meetings are face-to-face, may use a learning management system (LMS) or web pages to post the syllabus and assignments. Blended/Hybrid Course: A course where sufficient content is delivered online to create a reduction in the number of face-to-face class meetings. Online Course: A course in which all, or virtually all, the content is delivered online. Typically have no face-to-face class meetings (with the possible exception of proctored exams). Please check all that apply.

	Face-to-face course (1)	Blended/Hybrid course (2)	Online Course (3)
Undergraduate level (1)			
Other (Continuing Ed) (2)			

Q7 DigitUse
How often have you done each of the following?

	Never / NA (1)	Rarely (2)	Occasionally (3)	Regularly (4)
Used digital materials such as simulations and videos in course presentations. (1)				
Assigned material available only in				

eTextbook format. (2) Assigned books for which eTextbooks and traditional formats are both available. (3) Published digital scholarship (beyond publishing an online version of a traditional scholarly paper). (4) Used social media to interact with students. (5) Used social media to interact with colleagues. (6)				

Q8 Services What is your opinion about the nature of support that you have received from your institution? My institution...

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Don't Know (6)
Respects teaching with technology (in person or online) in tenure and promotion decisions. (1) Has a fair system of rewarding contributions made to digital pedagogy. (2) Has strong policies to protect intellectual property rights for digital work. (3)						

Provides support and flexibility in understanding and choosing intellectual property policies (4)						

Q9 SelRole
Who has a role in selecting educational resources for use in the courses you teach? (Select all that apply.)
Me (1)
Another faculty member (2)
A faculty committee (3)
Program or division (4)
Instructional design group (5)
Administration (6)
Other (7)

Q10 SelPrim Who has the PRIMARY role in selecting educational resources for use in the courses you teach? (Select only one response.)
Me (1)
Another faculty member (2)
A faculty committee (3)
Program or division (4)
Instructional design group (5)
Administration (6)
Other (7)

Q11 find When selecting resources for your teaching, which of the following factors are most important to you? (CHOOSE THREE) Please drag the three most important factors to the box on the right (the order in which you drag the three factors is not important).

Three Most Important Factors (in any order)
_____ Cost (1)
_____ Proven to improve student performance (2)
_____ Easy to find (3)
_____ Includes all the materials I need (4)
_____ High-quality and factually correct (5)
_____ Covers my subject area sufficiently (6)
_____ Works with my institution’s Learning Management System (LMS) (7)
_____ Mapped to learning outcomes (8)
_____ Current and up-to-date (9)
_____ Easy to use (10)
_____ Used by other faculty members (11)

_____ Provided by my institution (12)
_____ Ready to use (13)
_____ Adaptable/editable (14)
_____ Any other factor (15)

Q12 CCaware How aware are you of each of the following licensing mechanisms?

	Unaware (1)	Somewhat Aware (2)	Aware (3)	Very Aware (4)
Public Domain (1)				
Copyright (2)				
Creative Commons (3)				

Q13 How aware are you of Open Educational Resources (OER)? OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.
I am not aware of OER (1)
I have heard of OER, but don't know much about them (2)
I am somewhat aware of OER but I am not sure how they can be used (3)
I am aware of OER and some of their use cases (4)
I am very aware of OER and know how they can be used in the classroom (5)

Q14 OERlist
Please provide some examples of Open Educational Resources that you are aware of.
FREE TEXT BOX

	Not Included (1)	May or May Not Include (2)	Would Include (3)
Is available for free (1)			
Has the ability to remix and repurpose (2)			
Is provided with a Creative Commons license (3)			
Is easy to modify (4)			
Is easy to combine			

with other course materials (5) Is of high quality (6) Is more up to date than textbooks (7)			

Q15 Components If you were to describe the concept of open resources for education to a colleague, which if the following would you include in your description?

Q16 OERuse Have you used open educational resources in either of the following ways? I have used OER as…

	Never / NA (1)	Rarely (2)	Occasionally (3)	Regularly (4)
Primary course material (main class material used by teacher and students) (1) Supplementary course material (supporting material to enhance teaching or as further reference for students) (2)				

Q17 OERtype
Have you used any of the following types of open educational resources?

	Yes (1)	No (2)
Videos (1) Audio podcasts (2) Images (3) Infographics (4) Interactive games or simulations (5) Video lectures/tutorials (6) Tests and quizzes (7) Open textbooks, chapters from textbooks (8)		

Homework exercises (9) Slides and class presentations (10) Whole course (11) Elements of an existing course e.g. a module/unit (12) Lesson Plans (13) Any other type (14)		

Q18 RelQual How would you compare the quality of open resources to that of traditional resources on the following dimensions?

	Open Resources Superior (1)	About the Same (2)	Traditional Resources Superior (3)	No Opinion/ Don't Know (4)
Cost (1) Proven to improve student performance (2) Easy to find (3) Includes all the materials I need (4) High-quality and factually correct (5) Covers my subject area sufficiently (6) Works with my institution's Learning Management System [LMS] (7) Mapped to learning outcomes (8) Current and up-to-date (9) Easy to use (10)				

Materials are rated by faculty or editors (11) Adaptable/editable (12)				

Q19 OER3year
Do you think you will use Open Educational Resources in the next three years?
I am not interested in using Open Educational Resources (1)
I might consider using Open Educational Resources (2)
I will consider using Open Educational Resources (3)
No opinion /Don't know (4)

Q20 Qual
How would you rate the quality (factually correct, up-to-date, well-written, organized, effective) of Open Educational Resources and material from traditional publishers?

	Poor (1)	Average (2)	Good (3)	Excellent (4)	Don't Know (5)
Traditional publishers (1) Open Educational Resources (2)					

Q21 Ease
How would you rate the ease of searching for educational resources for your courses?

	Very Difficult (1)	Difficult (2)	Easy (3)	Very Easy (4)
From traditional publishers (1) Open education resources (2)				

Q22 Barrier
What are the three most important deterrents to the use of Open Educational Resources in your courses? Please drag the three most important deterrents to the box on the right (the order in which you drag the three deterrents is not important).

Three Most Important (in any order)
_____ Too difficult to use (1)
_____ Too hard to find what I need (2)

_____ Not enough resources for my subject (3)
_____ Not high-quality (4)
_____ Not current, up-to-date (5)
_____ Not relevant to my local context (6)
_____ No comprehensive catalog of resources (7)
_____ Not knowing if I have permission to use or change (8)
_____ Lack of support from my institution (9)
_____ Too difficult to change or edit (10)
_____ Too difficult to integrate into technology I use (11)
_____ Not effective at improving student performance (12)
_____ Not used by other faculty I know (13)

Q23 Impact
Do you believe the following statements about Open Educational Resources (OER) are true?

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	No Opinion, Don't Know (6)
Use of OER leads to improvement in student performance. (1)						
Use of OER leads to improvement in student satisfaction. (2)						
The open aspect of OER creates different usage and adoption patterns than other online resources. (3)						

Open education models lead to more equitable access to education, serving a broader base of learners than traditional education. (4) Use of OER is an effective method for improving retention for at-risk students. (5) OER adoption at an institutional level leads to financial benefits for students and/or institutions. (6) Use of OER leads to critical reflection by educators, with evidence of improvement in their practice. (7)						

Q24 comment
We welcome your comments. Please let us know your thoughts on any of the issues covered in this survey.
FREE TEXT BOX

Q25 Quote
May I quote your response? Published comments will only include attribution of the discipline of the faculty member and if they are full- or part-time ("Full-time Natural Sciences Faculty", "Part-time Mathematics Faculty"). No personal identifiable information will be included.
Yes (1)
No (2)

Q26 Recont
May I contact you for a follow-up interview?
Yes (1)
No (2)
If yes, please enter your email address: FREE TEXT BOX

End
Thank you. This is the end of the survey - pressing the ">>" button below will record your responses. Note: Do not press ">>" until you are sure you are finished - once your survey has been recorded you will no longer be able to edit your responses.

APPENDIX E

RECRUITMENT LETTER

From: Cote, Denise
To: ~Faculty - Full Time; ~Faculty - Part Time
Subject: Faculty Reminder: Open Resources Survey with awesome incentives!
Date: Thursday, April 21, 2016 6:49:11 PM

HI Everyone! Would you please take 15 minutes to respond to my survey? Let's find out where we are on OER. :)

Access the survey here: **https://niu.az1.qualtrics.com/SE/?SID=SV_2ocifMVVG1dCDSR**

Thank you!
Denise

From: Cote, Denise
Sent: Thursday, April 14, 2016 1:28 PM
To: ~Faculty - Full Time; ~Faculty - Part Time
Subject: Invitation to COD faculty to participate in research study with awesome incentives!

Dear COD Faculty Colleagues,

I am writing to invite you to participate in my dissertation research study, "***Examining Community College Faculty Attitudes Toward Open Educational Resources: A Mixed Methods Study***." I am a Ph.D. candidate in the Educational Technology, Research, and Assessment program at Northern Illinois University under the direction of Dr. Pi-Sui Hsu.

Would you please take 15 minutes to participate in an online survey? As an incentive to complete the survey, you can opt to be entered into a drawing for one of the following items: **an iPad, a Kindle Fire, or one of three 20.00 Starbucks gift cards**. *Participation in the incentive drawing is optional.*

My study consists of two sequential phases. The first phase is an exact replication of a national survey "*Opening the Curriculum: Open Educational Resources in Higher Education*" (Allen & Seaman, 2014). Through the comparison of your responses to those of our peers nationally, this survey will provide insight into your knowledge, attitudes, and usage of open educational resources. The second phase of my study will consist of in-depth interviews of purposefully selected faculty members. The interview is optional: *You can volunteer to participate in the interview phase.* Through the interviews, I hope to learn more about your attitudes and to also learn what type of institutional supports faculty feel are necessary to effectively explore and to potentially incorporate open resources into the college curriculum.

The informed consent statement that precedes the survey describes how your identity will be protected and gives more detail on how this study will be conducted.

Access the survey here: https://niu.az1.qualtrics.com/SE/?SID=SV_2ocifMVVG1dCDSR

The survey will be open until May 2, 2016. Don't delay—Act today! ☺

Thank you so much. I appreciate your time. Please feel free to contact me if you have questions.

Denise Cote
Professor/Reference Librarian
Electronic Resources Coordinator
College of DuPage Library
425 Fawell Blvd.
Glen Ellyn, IL 60137
630-942-2092

APPENDIX F

NATIONAL PUBLIC DATA (ALLEN & SEAMAN, 2014)

Table F1
Awareness of Open Educational Resources by Institution-Type

	Very aware of and know how to use	Aware of and know some uses	Somewhat aware of but not sure how to use	Have heard of but don't know much about	Not aware of
Associates	7.4%	19.0%	14.8%	32.5%	26.3%
Doctoral/research	5.6%	14.7%	11.9%	32.4%	35.4%
Masters	3.6%	11.8%	16.2%	29.3%	39.2%
Baccalaureate	7.3%	16.3%	23.1%	26.6%	26.7%
Specialized	0.0%	23.2%	22.4%	37.1%	17.4%

Table F2
Awareness of Open Educational Resources

	Very aware of and know how to use	Aware of and know some uses	Somewhat aware of but not sure how to use	Have heard of but don't know much about	Not aware of
Total	5.6%	15.7%	14.3%	31.7%	32.7%

Table F3
Awareness of Copyright and Licensing

	Very aware	Aware	Somewhat aware	Unaware
Awareness of copyright	35.8%	41.4%	19.3%	3.5%
Awareness of public domain	26.3%	41.2%	25.6%	6.9%
Awareness of creative commons	13.2%	22.3%	29.2%	35.4%

Table F4
Awareness of OER by Awareness of the Creative Commons

	Very aware	Aware	Somewhat aware	Unaware
I am very aware of OER and know how they can be used in the classroom	21.1%	6.1%	3.4%	1.6%
I am aware of OER and some of their use cases	25.1%	24.0%	12.3%	9.7%
I am somewhat aware of OER but I am not sure how they can be used	14.1%	15.9%	17.3%	10.8%
I have heard of OER, but don't know much about them	18.2%	29.9%	39.1%	31.7%
I am not aware of OER	21.4%	24.0%	27.8%	46.3%

Table F5
Use OER as Primary or Secondary Resource by Awareness of OER

	Regularly	Occasionally	Rarely	Never / NA
I am very aware of OER and know how they can be used in the classroom	56.0%	32.3%	7.1%	4.5%
I am aware of OER and some of their use cases	27.1%	47.8%	10.4%	14.7%
I am somewhat aware of OER but I am not sure how they can be used	11.8%	33.5%	18.7%	36.1%
I have heard of OER, but don't know much about them	4.8%	23.1%	20.3%	51.7%
I am not aware of OER	4.0%	8.9%	6.1%	80.9%

Table F6
Components of Open Resources

	Would include	May or may not include	Not included
Is available for free	72.4%	24.3%	3.3%
Has the ability to remix and repurpose	55.5%	36.2%	8.3%
Is easy to combine with other course materials	54.8%	38.9%	6.4%
Is easy to modify	45.5%	43.8%	10.7%
Is of high quality	41.0%	47.7%	11.2%
Is more up to date than textbooks	35.5%	49.3%	15.2%
Is provided with a Creative Commons license	29.1%	47.4%	23.6%

Table F7
Awareness of Open Educational Resources by Age

	Very aware of and know how to use	Aware of and know some uses	Somewhat aware of but not sure how to use	Have heard of but don't know much about	Not aware of
Under 35	5.2%	12.1%	9.4%	38.9%	34.4%
35 - 44	4.9%	16.0%	13.1%	29.0%	37.1%
45 - 54	6.9%	11.9%	14.9%	35.8%	30.5%
55+	5.1%	18.6%	15.2%	28.8%	32.3%

Table F8
Role in Selecting Educational Resources

	Yes	No
Myself	90.1%	9.9%
Another faculty member	22.4%	77.6%
A faculty committee	23.3%	76.7%
Program or division	17.0%	83.0%
Administration	9.2%	90.8%
Instructional design group	5.9%	94.1%
Other	1.7%	98.3%

Table F9
Role in Selecting Educational Resources-Myself

	Yes	No
Associates	80.7%	19.3%
Doctoral/research	95.2%	4.8%
Masters	94.4%	5.6%
Baccalaureate	88.5%	11.5%
Specialized	88.4%	11.6%

Table F10
Who Has the PRIMARY Role in Selecting Educational Resources for Use in the Courses you Teach?

	Myself	Another faculty member	Administration	Other
Total	81.3%	4.1%	1.9%	.9%

Table F11
Most Important Factor in Selecting Teaching Resources

	Yes	No
Proven efficacy	58.9%	41.1%
Trusted quality	48.5%	51.5%
Breadth of coverage	39.5%	60.5%
Integration	36.5%	63.5%
Wide adoption	21.4%	78.6%
Ease of use	19.1%	80.9%
Pedagogical	20.1%	79.9%
Comprehensive	14.3%	85.7%
Flexibility/modularity	15.0%	85.0%
Discoverability	8.9%	91.1%
Ready to use	5.9%	94.1%
Current	3.3%	96.7%
Provided by my institution	2.7%	97.3%
Faculty ratings	2.4%	97.6%
Cost	2.7%	97.3%

Table F12
Used OER as Primary Course Material

	Regularly	Occasionally	Rarely	Never / NA
Total	5.3%	12.3%	13.5%	68.9%

Table F13
Used OER as Supplementary Course Material

	Regularly	Occasionally	Rarely	Never / NA
Total	10.7%	25.6%	14.2%	49.5%

Table F14
Use OER as Primary or Secondary Resource

	Regularly	Occasionally	Rarely	Never / NA
Total	12.3%	25.0%	13.3%	49.4%

Table F15
Use of OER Types

	Yes	No
Images	88.7%	11.3%
Videos	88.9%	11.1%
Video lectures/tutorials	59.9%	40.1%
Homework exercises	55.0%	45.0%
Ebooks	47.0%	53.0%
Open textbooks, chapters from textbooks	46.3%	53.7%
Infographics	42.3%	57.7%
Whole course	39.9%	60.1%
Audio podcasts	36.7%	63.3%
Interactive games or simulations	32.5%	67.5%
Tests and quizzes	34.4%	65.6%
Elements of an existing course e.g. a module/unit	25.3%	74.7%
Slides and class presentations	9.0%	91.0%
Any other type	28.6%	71.4%

Table F16
Compare OER to Traditional Resources on the Following Dimensions

Dimension	Open resources superior	About the same	Traditional resources superior
Cost (free or low cost)	84.8%	12.7%	2.6%
Ratings (materials rated by faculty or editors)	50.2%	41.1%	8.7%
Currency (content up-to-date)	39.6%	52.1%	8.3%
Ease-of-use	26.9%	60.9%	12.2%
Discoverability (easy to find and select)	23.0%	54.8%	22.2%
Proven efficacy	14.6%	70.4%	15.1%
LMS integration	16.0%	64.9%	19.1%
Comprehensive (includes a range of materials for each subject)	12.2%	54.5%	33.3%
Trusted quality (factually correct, current, well-written, organized, effective)	13.0%	62.5%	24.5%
Mapped to learning outcomes	10.0%	73.0%	17.0%
Coverage	11.3%	56.1%	32.6%
Wide adoption (other faculty using them)	9.4%	53.5%	37.2%

Table F17
Quality of Traditional Publishers

	Don't know	Excellent	Good	Average	Poor
Total	31.8%	16.7%	37.3%	13.1%	1.1%

Table F18
Quality of Open Educational Resources

	Don't know	Excellent	Good	Average	Poor
Total	57.3%	6.3%	25.8%	9.3%	1.3%

Table F19
Barriers to OER

	Yes	No
No comprehensive catalog of resources	51.2%	48.8%
Too hard to find what I need	43.4%	56.6%
Not enough resources for my subject	36.5%	63.5%
Not knowing if I have permission to use or change	32.9%	67.1%
Not relevant to my local context	17.6%	82.4%
Not high-quality	19.2%	80.8%
Not used by other faculty I know	17.6%	82.4%
Lack of support from my institution	15.3%	84.7%
Too difficult to integrate into technology I use	14.4%	85.6%
Not effective at improving student performance	12.8%	87.2%
Too difficult to change or edit	10.9%	89.1%
Too difficult to use	8.4%	91.6%
Not current, up-to-date	6.1%	93.9%

Table F20
Ease of Searching - Traditional Publishers

	Very easy	Easy	Difficult	Very difficult
Total	12.3%	61.7%	23.2%	2.8%

Table F21
Ease of Searching - Open Education Resources

	Very easy	Easy	Difficult	Very difficult
Total	8.1%	55.1%	31.7%	5.1%

Table F22
Relative OER Searching

	OER superior	OER the same	OER inferior	Missing
Total	15.4%	36.3%	23.8%	0.244322617

Table F23
Do You Think You Will Use Open Educational Resources in the Next Three Years?

	No opinion /don't know	Will consider using OER	Might consider using OER	Not interested in using OER
Total	15.3%	31.5%	46.3%	7.0%

APPENDIX G

INTERVIEW QUESTIONS

Interviewee One: Michelle

Date of Interview: 09-27-2016

Interview Questions

Confirmation of demographic questions from survey:

Years teaching

Full time / Part Time

Confirmation of broad discipline area / division

In your survey response, you stated that you currently use open educational resources (OER) as "primary course material."

How do you describe OER?

Describe the extent to which OER materials are used in your course.

Please define "primary course material." For example, is it a required item?

What is a typical example of OER that you use in your classroom?

Describe how you go about selecting and incorporating OER into your course/s?

Describe a common student reaction to your OER materials. [Follow-up: what are other reactions?]

Describe the impact of OER student outcomes in your courses, if any.

Please describe any modifications that you made or would like to make on the OER you used. Why?

346 faculty members responded to the OER survey. Around half of these respondents reported they are not aware of OER.

How did you first become aware of OER?

What prompted you to try using OER in your classes?

If you could single out one factor that motivated you most to try OER, which would it be?

As you are aware, one of my central research goals is to find out what types of support and training our faculty would need to be more aware of OER and to perhaps adopt OER in their courses. Let's look back to when you were first exploring the possibilities of OER in your teaching. What kinds of support would have helped you most?

What kind of institutional supports would help you in your use of OER now?

If you were to educate colleagues in your division about your experiences with OER, how would you go about doing that?

Envision a college-wide OER initiative.

What would that initiative look like to you?

How do you think the Institution would best support faculty in their OER efforts?

<u>Specific Questions for Interviewee One</u>

In your survey response, you indicated that Traditional resources are superior to OER on the following dimensions:

Works with my institution's LMS, Easy to find, and Includes all the materials I need.

Please elaborate on these responses.

How are traditional materials superior in terms of interoperability with our LMS?

In what ways are traditional materials easier to find than OER?

What materials are included in traditional resources that you would like to see available in OER?

In your survey response, you chose "Lack of support from my institution" was one of your top three deterrents to using OER in your courses. Please elaborate (further) on this response.

Interviewee Two: Steve

Date of Interview: 09-28-2016

Interview Questions

Confirmation of demographic questions from survey:

Years teaching

Full time / Part Time

Confirmation of broad discipline area / division

In your survey response, you stated that you currently use open educational resources (OER) as "primary course material".

How do you describe OER?

Describe the extent to which OER materials are used in your course.

Please define "primary course material." For example, is it a required item?

What is a typical example of OER that you use in your classroom?

Describe how you go about selecting and incorporating OER into your course/s?

Describe a common student reaction to your OER materials. [Follow-up: what are other reactions?]

Describe the impact of OER student outcomes in your courses, if any.

Please describe any modifications that you made or would like to make on the OER you used. Why?

346 faculty members responded to the OER survey. Around half of these respondents reported they are not aware of OER.

How did you first become aware of OER?

What prompted you to try using OER in your classes?

If you could single out one factor that motivated you most to try OER, which would it be?

As you are aware, one of my central research goals is to find out what types of support and training our faculty would need to be more aware of OER and to perhaps adopt OER in their courses. Let's look back to when you were first exploring the possibilities of OER in your teaching. What kinds of support would have helped you most?

What kind of institutional supports would help you in your use of OER now?

If you were to educate colleagues in your division about your experiences with OER, how would you go about doing that?

Envision a college-wide OER initiative.

What would that initiative look like to you?

How do you think the Institution would best support faculty in their OER efforts?

Specific Questions for Interviewee Two

In your survey response, you indicated that OER Resources are superior to traditional resources on the following dimensions: Cost, Currency, Subject Coverage, and Adaptability. Please elaborate on these responses.

How is OER superior on cost?

How is OER superior on currency (up-to-date)?

How is OER superior on coverage of your subject?

How is OER more adaptable than traditional materials?

In this same question, you stated that OER is "about the same" on all other dimensions with the exception of "Works with my institution's LMS." For this item, you stated, "no opinion/don't know." If OER interoperability with the college's learning management system (BlackBoard) is important to your teaching, please elaborate on why or why not?

In your survey response, you stated that open educational resources are hard to find.

How did you find out about the specific OER that you are using?

How did you decide on/select the OER that you are using? What influenced you to choose the specific OER material that you using?

In your survey response, you indicated the following as a barrier to your use of OER: "Too difficult to integrate with the technology that I use." Please tell me about the technology you use and the difficulties you are encountering using OER this technology.